



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO
5900
NREAO/065
July 2, 2019

SCDHEC-BLWM
Attn: Lisa Appel
2600 Bull Street
Columbia, South Carolina 29201

RECEIVED

JUL 09 2019

SC DHEC - Bureau of
Land & Waste Management

Dear Ms. Appel:

Subject: Draft Final Per- and Polyfluoroalkyl Substances
Preliminary Assessment, Marine Corps Air Station
Beaufort, Beaufort, South Carolina

As per South Carolina R.61-79.270.11 and 270.30(k), I certify under penalty of law that the above-subject report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Christopher L. Vaigneur
Natural Resources and
Environmental Affairs Officer
By Direction of the
Commanding Officer

VERIFIED
7-9-19 EAT
SCANNED
7/9/19 mm (50)

TRANSMITTAL

TO: South Carolina
Department of Health and Environmental Control

Division of Waste Management

Bureau of Land and Waste Management

2600 Bull Street

Columbia, South Carolina 29201

(803) 898-0366

DATE: July 8, 2019

☐ Certified Mail

☐ Airmail

☐ Courier/Messenger

☐ FAX

☒ Federal Express/UPS

ATTENTION: Ms. Lisa Appel

SUBJECT SITE: Installation Wide
Marine Corps Air Station Beaufort
Beaufort, South Carolina

SUBMITTED HEREWITH: Draft Final Per- and Polyfluoroalkyl Substances
Preliminary Assessment
Marine Corps Air Station Beaufort
Beaufort, South Carolina

Ms. Appel,

Please find attached two (2) copies of the above referenced document (hardcopy and e-file) for your review and comment.

Should you have questions or comments regarding this submittal, please contact Megan Clark (843-302-8720) or Shawn Dolan (843-302-8725).

Thank you,

Shawn

Copy To:	Kathryn Butler	Hardcopy	E-file	By:	Shawn Dolan
		included	included		
	NAVFAC MIDLANT Bryan Beck	0	2		Ph: 843-302-8725
	NREAO Craig Ehde	1	1		shawn.dolan@aecom.com
	CDM-AECOM Multimedia JV Internal	0	1		

**DRAFT FINAL
PER- AND POLYFLUOROALKYL SUBSTANCES
PRELIMINARY ASSESSMENT
MARINE CORPS AIR STATION BEAUFORT
BEAUFORT, SOUTH CAROLINA**

**Revision: 0
Prepared for:**



**Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511-3095**

July 2019

**DRAFT FINAL
PER- AND POLYFLUOROALKYL SUBSTANCES
PRELIMINARY ASSESSMENT
MARINE CORPS AIR STATION BEAUFORT
BEAUFORT, SOUTH CAROLINA**

**Revision: 0
Prepared for:**



**Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511-3095**

Prepared by:



**CDM - AECOM Multimedia Joint Venture
10560 Arrowhead Drive, Suite 500
Fairfax, Virginia 22030**

Contract Number: N62470-14-D-9016

CTO 18F4605

July 2019

Table of Contents

LIST OF ACRONYMS AND ABBREVIATIONS	IV
EXECUTIVE SUMMARY	VI
1.0 INTRODUCTION	1
1.1 PA OBJECTIVES	1
1.2 PFAS BACKGROUND	2
1.2.1 GENERAL USES OF PFAS	3
1.2.2 KEY PFAS SOURCES AT NAVAL INSTALLATIONS	3
1.2.3 PFAS IN THE ENVIRONMENT	6
1.2.4 POTENTIAL HEALTH EFFECTS	7
1.3 REGULATORY BACKGROUND/HISTORY	7
1.3.1 PFOA STEWARDSHIP PROGRAM	7
1.3.2 UNREGULATED CONTAMINANT MONITORING RULE (UCMR)	8
1.3.3 EPA LIFETIME HEALTH ADVISORIES	8
1.4 NAVY POLICY	9
1.4.1 DASN (EI&E) POLICY MEMO, 21 OCTOBER 2014	9
1.4.2 DASN (E) POLICY MEMO, 14 SEPTEMBER 2015	9
1.4.3 ASD POLICY MEMO, 10 JUNE 2016	9
1.4.4 DASN (E) POLICY MEMO, 14 JUNE 2016	9
1.4.5 DASN (E) POLICY MEMO, 17 JUNE 2016	10
1.4.6 DASN (E) POLICY MEMO, 20 JUNE 2016	10
1.5 REPORT ORGANIZATION	11
2.0 FACILITY DESCRIPTION	12
2.1 LAND USE AND MISSION	12
2.2 SURROUNDING LAND USE	13
2.3 GEOLOGY	13
2.4 BIOLOGICAL AND ECOLOGICAL PROFILE	14
2.5 GROUNDWATER PATHWAY	14
2.5.1 HYDROGEOLOGIC SETTING	14
2.5.2 GROUNDWATER RECEPTORS	15
2.6 SURFACE WATER PATHWAY	17
2.6.1 HYDROLOGIC SETTING	17
2.6.2 SURFACE WATER RECEPTORS	17
2.7 SOIL EXPOSURE AND AIR PATHWAYS	18
2.7.1 SOIL AND AIR RECEPTORS	18
3.0 INVESTIGATION SUMMARY	19
3.1 REVIEW OF RECORDS	19
3.1.1 NAVY ADMINISTRATIVE RECORD	19
3.1.2 ENVIRONMENTAL DATA RESOURCES, INC.	20
3.1.3 AECOM ARCHIVES	20
3.1.4 GENERAL SEARCH ENGINE	20
3.1.5 ADDITIONAL DOCUMENTS	20
3.2 SITE INTERVIEWS	21
3.3 SITE WALK	22

4.0	FINDINGS AND RECOMMENDATIONS	23
4.1	FIRE TRAINING AREA SITE	23
4.2	HANGAR 1331	27
4.3	1991 CRASH SITE.....	27
4.4	COMPASS ROSE CRASH SITE.....	28
4.5	WEST RAMP SPILL AREA.....	28
4.6	EAST RAMP SPILL AREA.....	29
4.7	HANGAR 414.....	30
4.8	HANGAR 1084	31
4.9	HANGAR 418.....	32
4.10	HANGAR 2146	34
4.11	FORMER HANGAR 416	35
4.12	HANGAR 728.....	36
4.13	HANGAR 729.....	38
4.14	HANGAR 594.....	39
4.15	BUILDING 1256.....	40
4.16	FORMER BUILDING 595 – FORMER AIRCRAFT RESCUE AND FIRE FIGHTING/FIRE DEPARTMENT STATION	41
4.17	BUILDING 1313 – AIRCRAFT RESCUE AND FIREFIGHTING STATION	42
4.18	STORM WATER POND.....	43
4.19	SWMU 74 – HAZARDOUS WASTE STORAGE TANK 979	44
4.20	SWMU 12 – FORMER EASTERN FIRE TRAINING PITS	45
4.21	SWMU 16 – STORM SEWER DRAINAGE OUTFALL.....	46
4.22	BUILDING 843 – MOTOR TRANSPORT MAINTENANCE SHOP.....	47
4.23	SWMU 67 – SEWAGE TREATMENT PLANT.....	47
4.24	SWMU 6 & 14 – INERT LANDFILL SEEPAGE TRENCHES/INERT LANDFILL.....	48
4.25	BUILDING 1171 – MWSD-31 FUELS	49
4.26	SWMU 2 – LAFRENE ROAD LANDFILL.....	50
4.27	BUILDING 2085 – FIRE DEPARTMENT STATION.....	51
4.28	2019 FIRE RESPONSE AREA	52
5.0	CONCLUSIONS AND RECOMMENDATIONS.....	53
5.1	AREAS RECOMMENDED FOR NO FURTHER ACTION	53
5.2	EXISTING SAMPLING PROGRAMS	53
5.3	AREAS RECOMMENDED FOR FURTHER ASSESSMENT	53
5.4	NEXT STEPS.....	54
REFERENCES	55

Tables

Table 1	Sites Recommended for PFAS Investigation
Table 2	Sites Recommended for NFA

Figures

Figure 1	Sitewide Areas of Concern and Operable Units
Figure 2	Western Areas and Buildings
Figure 3	Northern Areas and Buildings
Figure 4	Central Areas and Buildings
Figure 5	Eastern Areas and Buildings
Figure 6	Southeastern Areas and Buildings
Figure 7	Southwestern Areas and Buildings

Appendices

Appendix A	AFFF Storage Inventories
Appendix B	AFFF Spill Records
Appendix C	MCAS Beaufort General Development Map
Appendix D	AFFF Waste Disposal Manifests
Appendix E	Fire Response Narrative – February 2019
Appendix F	Annotated Bibliography
Appendix G	Communication Logs

LIST OF ACRONYMS AND ABBREVIATIONS

AFFF	aqueous film forming foam
AOC	Areas of Concern
AR	Administrative Record
AST	aboveground storage tank
ARFF	aircraft rescue and fire fighting
BJWSA	Beaufort Jasper Water and Sewer Authority
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	crash fire rescue
CMS	corrective measures study
CSF	cancer slope factor
CSMs	conceptual site models
CTO	Contract Task Order
DoD	Department of Defense
DON	Department of the Navy
EDR	Environmental Data Resources, Inc.
FTA	firefighting training area
IAS	Initial Assessment Study
IR	Installation Restoration
JP	jet propellant
JV	Joint Venture
MAG	Marine Air Group
MCAS	Marine Corps Air Station
MIDLANT NAVFAC	Mid-Atlantic Naval Facilities Engineering Command
MILSPEC	military specification
NAS	Naval Air Station
Navy	United States Navy
NERP	Navy Environmental Restoration Program
NFA	no further action
NREAO	Natural Resources and Environmental Affairs Office
OWS	oil-water separator
PA	Preliminary Assessment
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutane sulfonate
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate

ppt	parts per trillion
PWS	public water supplies
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RFI	RCRA Facility Investigation
SAP	sampling and analysis plan
SCDHEC	South Carolina Department of Health and Environmental Control
SWMU	Solid Waste Management Unit
TAUs	twin agent units
UCMR3	Third Unregulated Contaminant Monitoring Rule
UCMR4	Fourth Unregulated Contaminant Monitoring Rule
UFP	Uniform Federal Policy
USEPA	United States Environmental Protection Agency
UST	underground storage tanks
WWTP	waste water treatment plant

EXECUTIVE SUMMARY

The purpose of this Preliminary Assessment (PA) is to present information that the United States Navy (Navy) has compiled as part of an installation-wide assessment of per- and polyfluoroalkyl substances (PFAS). PFAS containing materials are either suspected or known to have been used, stored, disposed of, and/or released at numerous areas within the Marine Corps Air Station (MCAS) Beaufort.

Specific areas were identified where aqueous film forming foam (AFFF) containing PFAS or other PFAS-containing materials were potentially used, stored, disposed of, and/or released at MCAS Beaufort. The potential PFAS sources identified for these areas are as follows: former and current firefighting training areas (FTAs), fixed fire suppression systems, historic landfills, emergency response sites and AFFF storage areas. This encompasses the types of operations considered by the Navy to be where PFAS-containing materials could have been used, stored, disposed of, and/or released. Site-specific conceptual site models (CSMs) were developed for each of these areas using site drawings, documents and other lines of evidence to evaluate the likelihood of PFAS impacts. The Navy is currently assessing one former FTA within MCAS Beaufort that has been identified as having PFAS impacts. The Navy has cumulatively identified 32 sites within MCAS Beaufort that have been associated with the historic use, storage, disposal, and/or release of materials containing PFAS. Tables 1 and 2 provide a comprehensive list of identified sites with key elements of each CSM, including details on the potential source for PFAS contamination, years of operation, and recommended path forward. Figures 1 through 7 provide a graphical summary of these areas.

1.0 INTRODUCTION

This preliminary assessment (PA) report of potential sources of per- and polyfluoroalkyl substances (PFAS) at the Marine Corps Air Station (MCAS) Beaufort, South Carolina is prepared for the Department of the Navy (DON) under Contract N62470-14-D-9016, Contract Task Order (CTO) N4008518F4605. The CDM - AECOM Multimedia Joint Venture (JV) has prepared this PA on behalf of the Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC MIDLANT).

Research and investigations to support this document began in April 2018 and extended through March 2019. A records search was initiated in April 2018, during which time AECOM conducted a record review and interviewed MCAS Beaufort personnel to document historic and current fire training exercises, historic and current use of aqueous film-forming foam (AFFF) containing PFAS, and potential use and storage of other materials containing PFAS.

As a result of these efforts, the Navy identified 32 sites/buildings to consider for assessment of PFAS impacts. The sites/buildings identified have been associated with the historic use, disposal, and/or release of materials containing PFAS. Site-specific conceptual site models (CSMs) for each area/building are presented in this PA. Currently Solid Waste Management Unit (SWMU) 12, one of the 32 identified sites, is being assessed for PFAS impacts in groundwater. Tables 1 and 2 provide a comprehensive list of sites suggested for assessment with key elements of each CSM, including details on the potential source for PFAS contamination, years of operation, and the recommended path forward. Figure 1 provides a plan view of MCAS Beaufort with these sites shown.

In addition to the 32 sites recommended for assessment, twenty-four sites have been recommended for no further action (NFA) based on a lack of evidence regarding the presence or release of materials containing PFAS. CSMs for sites recommended for NFA will be presented in a forthcoming technical memorandum.

Prior to the development of this PA, investigatory work for PFAS began at Solid Waste Management Unit (SWMU) 12. The details for this sampling effort are provided in the *Uniform Federal Policy (UFP) Sampling and Analysis Plan (SAP) for Corrective Measures Study (CMS) Addendum for SWMU 12* (Resolution Consultants, 2016).

1.1 PA OBJECTIVES

The MCAS Beaufort PA for PFAS is part of a Navy-wide Installations assessment of potential historical sources of PFAS. The objectives of this PFAS PA of MCAS Beaufort are to:

- Identify and catalog all potential or actual PFAS sources (see list below),

- Eliminate from further consideration those areas where there is no evidence of a PFAS release or suspected release and document the rationale for their elimination,
- Identify areas requiring further PFAS investigation,
- Identify receptors and migration pathways (both on and off the facility),
- Determine whether an emergency response action is warranted because of current complete exposure pathways (e.g. on-Base or off-Base drinking water source within one-mile downgradient of potential source area), and
- Set priorities for a base-wide Site Inspection (SI).

To accomplish these objectives, the following activities have been completed:

- A review of existing information to identify and characterize potential PFAS releases.
- A review of existing information to identify potential off-base receptors within 1 mile of the facility boundary (note that this is less extensive than the study area defined in USEPA's PA Guidance, but will be expanded if necessary in later project phases if complete pathways beyond 1 mile are identified).
- Interviews with relevant site personnel to validate and verify data collected during the data review, and to provide supplemental information.
- A site reconnaissance of the facility to identify any evidence of PFAS releases and potential receptors and migration pathways, to identify all areas of concern, and to fill data gaps identified in the data review and interviews.
- Identify any need for initiation of a rapid response drinking water investigation in accordance with Navy policy (DASN June 2016).

1.2 PFAS BACKGROUND

PFAS have been identified by the U.S. Department of Defense (DoD) and the United States Environmental Protection Agency (USEPA) as “**emerging contaminants**”. Emerging contaminants can be broadly defined as a contaminant that: has a reasonably possible pathway to enter the environment; presents a potential unacceptable human health or environmental risk; and does not have regulatory standards based on peer-reviewed science, or the regulatory standards are evolving due to new science, detection capabilities, or pathways (DoD, 2009). PFAS are of environmental concern because of their persistence in the environment and in organisms, their migration potential in aqueous systems (e.g., groundwater), their historically widespread use in

commercial products, and their possible health effects at low levels of exposure. PFAS are anthropogenic compounds with multiple strong carbon-fluorine bonds.

1.2.1 GENERAL USES OF PFAS

The chemical properties of PFAS make them useful for many commercial products because they are heat resistant and can repel oil, grease, and water. PFAS have been manufactured for use in a wide variety of products including fire-fighting foam, non-stick cookware, fiber and fabric stain protection, food packaging, and personal care products. The pervasive use of PFAS in commercial and industrial products has led to the discovery of PFAS in soil, air, and groundwater worldwide.

1.2.2 KEY PFAS SOURCES AT NAVAL INSTALLATIONS

PFAS have been used in a variety of military applications, including as a component of AFFF, which was routinely used at fire-fighting training areas (FTAs) and firefighting equipment test areas. In addition, current and historical AFFF storage and transfer areas are of potential concern for release to the environment. As such, identification of areas where AFFF was released to the environment, either as repeated small releases or as a significant one-time release, is key to determining potential PFAS sources to environmental media.

PFAS from AFFF used in firefighting, firefighting training, and fire suppression systems are considered to have the greatest potential for release of PFAS to the environment in terms of mass/concentration at DON installations. Other potential sources of PFAS to the environment include operations wastes (e.g., from chromium electroplating), historical on-site land disposal areas/landfills of PFAS-containing materials, waste water treatment sludges and effluents, etc. Areas of interest for this PFAS PA include those where AFFF may have been applied, released, or stored. These include current and former fire training areas, equipment test and cleanout areas, buildings with fire-fighting infrastructure (e.g., hangars, AFFF storage/handling areas, pump houses, etc.), unplanned release areas (e.g., crash sites), and fire suppression systems located at fuel storage area(s).

AFFF IN FIRE-FIGHTING TRAINING AND FIRE SUPPRESSION

AFFF containing PFAS was developed in the 1960s for use on Class B fires (i.e., fires in flammable liquids or vapors), and was put into routine use by the early 1970s. In November 1969, a military specification (MIL SPEC) was issued that described characteristics which AFFF needed to demonstrate in order to be used by the military, including a requirement for formulations containing PFAS. As such most AFFF used at military installations after the 1970's likely included some combination of PFAS.

Typically, AFFF concentrate was proportionally mixed into water lines using in-line eductors or other proportioning devices to create the necessary foam solution ranging from 3% to 6% of the concentrate. Class A fire-fighting foams were used to extinguish wood and grass fires, and do not contain PFAS. Therefore, Class A fire-fighting foams are not a concern for this PA.

During development of this PA, areas of AFFF use, storage and release were identified. These areas include former and current FTAs, crash and fire emergency response sites, storage facilities, buildings with fixed fire suppression systems, and locations where trucks containing AFFF are stored.

Results of this PA identified two former and one current FTA. Firefighting training exercises were performed at SWMU 12 from the mid-**1950's to the mid-1960's** and at SWMU 13 for a total of two **years in the late 1960's and late-1970's**. **Current firefighting training exercises take place at SWMU 18** (A. T. Kearney, Inc., 1986). Additionally, this investigation identified two crash sites and one fire site where emergency response included confirmed AFFF use.

Eight locations were identified as storage areas for pure AFFF concentrate in unopened containers or AFFF waste. Buildings 131, 612, 262, 1270, 615 and 617 are used to store AFFF in unopened 5-gallon pails and/or 55-gallon drums. Aboveground storage tank (AST) 979 stores AFFF rinstate, and Building 1205 is used to store AFFF, AFFF rinsate and AFFF contaminated soils in 55-gallon drums.

The following buildings were identified as locations that house trucks or twin agent units (TAUs) storing AFFF, or have AFFF in an AST associated with a fixed fire suppression system:

- Former Fire Department Station – Building 595
- Fire Department Station – Building 2085 (3 trucks with AFFF installed);
- Aircraft Rescue and Firefighting (ARFF) Station – Building 1313 (10 trucks and 2 TAUs with AFFF installed);
- MWSD-31 Fuels – Building 1171 (3 TAUs with AFFF installed);
- Aircraft hangars with AFFF in an AST associated with a fixed fire suppression system: Hangar 418, Hangar 414, Hangar 1084, Hangar 728, Hangar 729, Hangar 2146, Hangar 594, Hangar 1256, Hangar 1331, Hangar 3060 and former Hangar 416.

Additionally, AFFF is temporarily stored in mobile closed system de-foaming units when a truck containing AFFF needs major maintenance. Prior to maintenance, AFFF is drained into one of two mobile closed system de-foaming units on site. The units consist of an approximately 55-gallon

plastic tote and drip pans for secondary containment. One mobile de-foaming unit is stationed at the current FTA and one is stationed at the ARFF Station.

Fuel storage areas were investigated to evaluate the presence or absence of fire suppression systems. A review of base records of AFFF in fixed fire suppression systems indicated that fuel storage areas are not equipped with AFFF.

ELECTROPLATING

Electroplating, specifically hard chromium plating, is an industrial activity where PFAS-containing mist suppressants may have been used. Electroplating consists of creating an electrolytic cell that enables a thin layer of metal to be deposited onto an electrically conductive metal surface. PFAS were sometimes used during the chromium electroplating process as a surfactant in chromic acid baths. As a surfactant, PFAS lowered the surface tension (adhesion of materials) by creating a thin, foamy layer on the surface of the chrome bath for mist-suppression. This mist-suppressant reduced the formation of airborne chromium aerosols during the plating process, which are known to be carcinogenic and allergenic. Areas where non-chromium electroplating operations were carried out would not be expected to have used PFAS-containing mist suppressants.

At MCAS Beaufort, former electroplating operations included cadmium plating. According to the MCAS Environmental Compliance Supervisor and the Installation Restoration (IR)/Underground Storage Tank (UST) Manager, chrome plating was not utilized in electroplating operations on site (Appendix G). Currently, chrome, copper, nickel and tin electroplating processes are identified as utilizing PFAS containing materials (ITRC, 2017). Therefore, the cadmium plating operations at MCAS Beaufort were not included in this PA.

LANDFILL OPERATIONS, WASTE DISPOSAL AREAS, AND WASTEWATER TREATMENT PLANTS

Historically, landfills received wastes generated from military installations, including waste streams from operational areas (machine shops, electroplating operations, etc.), housing areas, and waste from wastewater treatment plants (WWTPs) and/or homeported ships. These waste streams may contain industrial and/or consumer products that were either manufactured with PFAS or contain PFAS constituents which may leach out of the landfill. Additionally, waste material biosolids and sludge from WWTPs can contain PFAS.

The results of this PA identified two WWTPs, including one used during the 1940s and one used from 1956 through 2011, and several former landfills and disposal areas. Former landfills at MCAS Beaufort include SWMU 1- Fenced Hazard Area, SWMU 2- Lafrene Road Landfill, SWMU 3- Borrow

Pit Landfill, SWMU 6 & 14- Inert Landfill Seepage Trenches/Inert Landfill, SWMU 8- Kavieng Street Landfill, and SWMU 84- Pistol Range Landfill. Additional historic waste disposal areas onsite include locations where miscellaneous debris was disposed of, and locations where waste from specific operations were disposed of. These additional disposal areas include Area of Concern (AOC) O-Waste Disposal Area, AOC P- Suspect Disposal Area, SWMU 4- Southeast Point Disposal Area, SWMU 9- Former Lube Oil Pit, SWMU 5- Pesticide Residue Pit Area, SWMU 17- Funa Futi Road Disposal Area, SWMU 76- Former Incinerator Disposal Area, SWMU 77- Acid Neutralization Pit, SWMU 85- Automotive Debris Pile, and SWMU 89- Surface Debris Near Building 1307.

Site personnel indicated that the majority of historic landfills did not receive AFFF or AFFF impacted waste, and that use of most of the historic landfills at MCAS Beaufort was discontinued prior to the use of AFFF onsite. Previous investigations indicate that two historic landfills were still active when AFFF use onsite began, and waste disposed of in some historic landfills included WWTP sludge, and other materials potentially containing PFAS.

SPILL RESPONSE AND VAPOR SUPPRESSION

Applying AFFF to fuel spills reduces volatilization of the fuels and decreases the risk of ignition. According to site personnel this practice has been used at MCAS Beaufort for fuel spills that posed a potential risk to MCAS Beaufort personnel and assets. Results of this PA identified two areas where AFFF was utilized during a spill response: the West Ramp Area and the East Ramp Area.

OTHER POTENTIAL SOURCES

Due to the widespread use of PFAS, there may be activities other than the ones mentioned above where PFAS were used. PFAS have been included in some anti-fouling and stain-resistant paint formulations. It is possible that in significant amounts, these could be sources of PFAS to the environment.

1.2.3 PFAS IN THE ENVIRONMENT

PFAS are a class of anthropogenic compounds characterized by carbon chains of varying lengths containing carbon-fluorine bonds. The strong electronegative force of the carbon-fluorine bond requires a large amount of energy to break, which makes PFAS extremely resistant to biodegradation, photo-oxidation, direct photolysis, and hydrolysis. In addition to their environmental persistence, PFAS are readily soluble in aqueous solution and therefore have potential for migration to groundwater from soil and with groundwater flow to off-site locations. Due to their persistence and mobility, releases of PFAS to the environment present a unique set of challenges and concerns.

1.2.4 POTENTIAL HEALTH EFFECTS

Additional research is needed to more clearly understand the potential health effects that may be caused by exposure to PFAS compounds. To date there is limited information on only a few out of the thousands of total PFAS. To date, there are no Tier 1 toxicity values for any PFAS. Tier 1 toxicity values are the preferred source for toxicity factors in Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) human health risk assessments.

The USEPA's Superfund Health Risk Technical Support Center has estimated a Tier 2 noncarcinogenic toxicity value for PFBS (USEPA, 2014). The oral reference dose (RfD) is based on kidney effects observed in female rats. Due to a lack of information in the current literature, toxicity values for inhalation exposure and cancer endpoints could not be estimated for perfluorobutane sulfonate (PFBS).

The USEPA Office of Water developed an RfD for perfluorooctanoic acid (PFOA) which is based on a developmental toxicity study using mice. The critical effects included reduced ossification in parts of the hand/feet and accelerated puberty in male pups following exposure during gestation and lactation (EPA, 2016a). The EPA Office of Water also determined that PFOA should be classified as "suggestive evidence of carcinogenic potential" and estimated an oral cancer slope factor (CSF) based on tumor development in rat testes.

The EPA Office of Water estimated an RfD for perfluorooctane sulfonate (PFOS) based on a developmental toxicity study in rats; the critical effect was decreased pup body weight following exposure during gestation and lactation (EPA, 2016b).

PFOA and PFOS are known to be transmitted to the fetus in cord blood and to the newborn in breast milk. Because the developing fetus and newborn seem particularly sensitive to PFOA- and PFOS-induced toxicity, the RfDs based on developmental effects are also protective of adverse effects in adults.

1.3 REGULATORY BACKGROUND/HISTORY

1.3.1 PFOA STEWARDSHIP PROGRAM

In 2006, USEPA initiated the 2010/2015 PFOA Stewardship Program in which eight major companies in the United States committed to reduce facility emissions and product contents of PFOA and related chemicals on a global basis by 95% no later than 2010, and to work toward

eliminating emissions and product content of these chemicals by 2015. All companies have met the program goals. To meet the program goals, most companies stopped the manufacture and import of long-chained PFAS, and transitioned to alternative chemicals. On January 21, 2015, USEPA proposed a Significant New Use Rule under the Toxics Substances Control Act to require manufacturers (including importers) of PFOA- and PFOA-related chemicals to notify USEPA at least 90 days before starting or resuming new uses of these chemicals in any process.

1.3.2 UNREGULATED CONTAMINANT MONITORING RULE (UCMR)

The USEPA issued the Third Unregulated Contaminant Monitoring Rule (UCMR3)¹ in May 2012. The UCMR3 required monitoring, between 2013 and 2015, for 30 substances at all large public water systems (PWSs) serving more than 10,000 people and 800 representative PWSs serving 10,000 or fewer people. Six PFAS compounds were included in the UCMR3 contaminant list. Of these 6 PFAS, USEPA issued health advisory levels for only two, PFOA and PFOS. The UCMR3 results found these two chemicals were present in less than 1% of the nearly 5,000 public water systems that sampled per UCMR3.

In December 2016, USEPA issued the fourth Unregulated Contaminant Monitoring Rule (UCMR4). UCMR4 requires all large PWSs serving more than 10,000 people and 800 representative PWSs serving 10,000 or fewer people to sample for 30 chemicals between 2018 and 2020. There are no PFAS included on the UCMR4 list of contaminants that require sampling and analysis.

1.3.3 EPA LIFETIME HEALTH ADVISORIES

In May 2016 the USEPA Office of Water issued a drinking water lifetime health advisory for PFOA and PFOS. Health advisories are not enforceable, regulatory levels; rather they are levels that would provide Americans, including sensitive populations, with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water. The health advisory is 70 parts per trillion (ppt) for PFOA and 70 ppt for PFOS. When both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 ppt health advisory level.

¹ The 1996 Safe Drinking Water Act (SDWA) amendments require that once every five years EPA issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWSs).

1.4 NAVY POLICY

1.4.1 DASN (EI&E) POLICY MEMO, 21 OCTOBER 2014

As a result of Navy releases impacting PWS tested under the UCMR3, the DON issued a policy requiring on-base drinking water sampling for PFOA and PFOS for bases where groundwater was used as drinking water and PFAS could have been released nearby in the past. Installations that were not required to sample finished drinking water under UCMR3 that produce drinking water from on-installation groundwater sources and have an identified or suspected PFAS release within approximately 1-mile up-gradient to the drinking water source were required to sample their finished drinking water by December 2015.

Drinking water at MCAS Beaufort is purchased from a PWS; therefore, no sampling was required at MCAS Beaufort under this policy.

1.4.2 DASN (E) POLICY MEMO, 14 SEPTEMBER 2015

This policy memo largely echoed the requirements laid out in the October 2014 DASN (E) policy memo. However, this memo specified that if levels of PFOS and/or PFOA in drinking water exceeded the current USEPA health advisory (i.e., the 2009 provisional short-term health advisories), then alternative drinking water must be supplied until the PFOA and/or PFOS levels were reduced to below the USEPA health advisories.

Drinking water at MCAS Beaufort is purchased from a PWS; therefore, no sampling was required at MCAS Beaufort under this policy.

1.4.3 ASD POLICY MEMO, 10 JUNE 2016

This DoD policy memo specified that decisions regarding drinking water should be based on the lifetime health advisories issued by the USEPA's Office of Water in May 2016, rather than the now outdated provisional short-term health advisories issued in 2009.

Drinking water at MCAS Beaufort is purchased from a PWS; therefore, no sampling was required at MCAS Beaufort under this policy.

1.4.4 DASN (E) POLICY MEMO, 14 JUNE 2016

This policy expanded the sampling PFOA and PFOS at all DON installations where such sampling was not previously completed under USEPA's UCMR 3 or the DON's October 2014 policy. This

memo also specified that for instances where drinking water from an installation is purchased from a public water system, but wasn't tested under UCMR3, that the installation must sample the finished drinking water to comply with this policy. Additionally, this policy included reporting requirements to the DASN (E) office for all PFOA and/or PFOS drinking water results.

The finished water purchased from Beaufort Jasper Water and Sewer Authority (BJWSA) was sampled at MCAS Beaufort to comply with this policy. No PFOA or PFOS were detected in the drinking water.

1.4.5 DASN (E) POLICY MEMO, 17 JUNE 2016

This policy defines the DON's intention to remove, dispose, and replace legacy AFFF that contains PFOS and/or PFOA once environmentally suitable substitutes are identified and certified to meet MILSPEC requirements. This policy directs the following actions be taken until suitable replacements are certified:

- Immediately cease the uncontrolled environmental release of AFFF for shoreside installations, with the exception of emergency responses.
- Update and implement Navy and Marine Corps firefighting system requirements, as needed, to ensure fire and emergency service vehicles and equipment at DON installations and facilities are tested and certified in a manner that does not allow the release of AFFF to the environment.
- By the end of FY2017, remove and dispose of uninstalled PFOS-containing AFFF in drums and cans from local stored supplies for shore installations and ships to prevent future environmental releases

1.4.6 DASN (E) POLICY MEMO, 20 JUNE 2016

This policy required Navy to identify and prioritize sites for investigation if drinking water resources, on- or off-installation, are thought to be vulnerable to PFAS contamination from past Navy/Marine Corps PFAS releases. Sites with drinking water sources within 1 mile downgradient from known or potential releases of PFAS were assigned the highest priority. This policy directed the sampling of off-base drinking water at these high priority (Priority 1) sites within FY17.

The primary mechanism to identify potential PFAS release sites/AOC, was review of Navy ER,N records. To ensure that all potential PFAS release mechanisms were identified, installations were directed to review installations to identify areas that are not already part of the ER,N program. The

Navy has completed the sampling for all off-base potentially impacted drinking water sources that were identified as a result of this policy and currently known exposures have been addressed.

During the initial query, SWMU 12, and SWMU 13, SWMU 36 and UXO 3 were identified as potential PFAS release sites at MCAS Beaufort. Two Environmental Data Resources, Inc. (EDR) reports for SWMU 12, and SWMU 13, SWMU 36 and UXO 3 were prepared as part of DASN (E) Policy Memo, 20 June 2016. According to MCAS Beaufort compliance personnel, the sites were determined to require no PFAS drinking water investigation and were not prioritized.

The Navy has completed the sampling for all off-base potentially impacted drinking water sources that were identified as a result of the June 2016 policy and currently known exposures have been addressed.

1.5 REPORT ORGANIZATION

The PFAS PA Report for Navy Installation is organized in the following Sections:

1. Introduction
2. Facility Description
3. Investigation Summary
4. Findings and Recommendations
5. Conclusions and Recommendations

2.0 FACILITY DESCRIPTION

MCAS Beaufort is located approximately 14 miles inland of the southern coast of South Carolina at the head of the Beaufort River, approximately 5 miles north of the City of Port Royal and 3 miles northwest of the City of Beaufort in Beaufort County, South Carolina (Figure 1). MCAS Beaufort occupies approximately 7,000 acres of land.

2.1 LAND USE AND MISSION

MCAS Beaufort consists of administrative buildings, military quarters, maintenance and training facilities, and aircraft runways, hangars and support facilities. The majority of the existing structures at MCAS Beaufort were constructed between 1954 and 1959 (Dames and Moore, 1986). Additional facilities including taxiways, aircraft parking aprons, airstart facilities and aircraft maintenance hangars were constructed from the 1960s to the 1980s. Several aircraft maintenance hangars were constructed from the early 2000s to present.

The current facilities at MCAS Beaufort provide a home base of operations for the Second Marine Aircraft Wing. MCAS Beaufort provides operations, logistics and administrative support to tenant units, maintenance for assigned aircraft and ground support equipment, and services and organizational maintenance for transient aircraft. Additionally, when necessary, MCAS Beaufort provides air training facilities, and search and rescue and administrative aircraft and services. The units stationed at MCAS Beaufort are controlled by Marine Air Group (MAG) 31.

From 1943 through 1946, a Naval Air Station (NAS) occupied 1,357 acres of the current MCAS Beaufort property (Dames and Moore, 1986). During World War II, the NAS served as the location for advanced training and operations of aircraft squadrons, and operated antisubmarine patrols along the east coast. The buildings used for NAS operations were constructed as temporary structures, and most of the buildings were demolished when the NAS was deactivated in 1946.

Beaufort was selected as the site for a jet aviation facility, development of which began in 1954 (Dames and Moore, 1986). In 1955, the installation was designated an Auxiliary Landing Field for MCAS Cherry Point, North Carolina, and was commissioned as a Marine Corps Auxiliary Air Station in 1956. In 1957, MAG-32 was the first squadron to be based at the station. In 1961, the station also became the home of MAG-31 and the activity was redesignated as an MCAS. MAG-32 was transferred to another station in 1975.

2.2 SURROUNDING LAND USE

MCAS Beaufort is bordered by salt marshes and saltwater creeks to the south, east and northeast, and residential and commercial properties to the north and west. Two daycare facilities exist within one-mile of MCAS Beaufort; however, both are located upgradient of suspected PFAS release areas. There are no schools within one-mile of MCAS Beaufort.

2.3 GEOLOGY

The four main geologic units in the Beaufort region are, from shallowest to deepest, Quaternary deposits, the Hawthorn Formation, the Cooper Marl, and the Floridan Aquifer. Quaternary deposits consist of fine- to medium-grained white and dark brown, angular quartz sand and clayey sand with interbedded grey and green clay (Dames and Moore, 1986). Regionally, the formation varies in thickness from 25 to 70 feet, and is estimated to be approximately 35 feet thick below MCAS Beaufort. A shallow unconfined aquifer exists in this unit.

In the MCAS Beaufort area, the Quaternary deposits are underlain by the lower Miocene-age Hawthorn Formation (Dames and Moore, 1986). The Hawthorne Formation consists of phosphatic clayey sand to sandy clay. This formation is not continuous across MCAS Beaufort but, where present, it can be up to 20 feet thick and functions as a semi-confining unit between the overlying unconfined surficial aquifer and underlying Floridan Aquifer.

The Cooper Marl in the vicinity of MCAS Beaufort consists of phosphatic greenish-grey clay and fine-grained sand and can be up to 15 feet thick (Dames and Moore, 1986). Regionally, the Cooper Marl acts as a confining unit for the Floridan Aquifer. However, the Cooper Marl has not been encountered beneath MCAS Beaufort.

Tertiary-age bedrock underlies the Cooper Marl and typically varies from relatively pure to impure limestone containing clay or shale to relatively thick marls (Dames and Moore, 1986). The formation is relatively permeable and contains the highly productive Floridan Aquifer. The limestone is divided into three units. The uppermost unit consists of white, cream-colored, or light-grey fossiliferous limestone that varies in thickness from 0 to 200 feet. The middle unit consists of sandy or clayey limestone that varies in thickness from 200 to 600 feet. The lower unit is an indurated, siliceous, glauconite, light grey to creamy yellow limestone that is typically 30 feet thick.

A structural high, known as the Beaufort Arch, is located immediately east of MCAS Beaufort and influences the thickness of the confining units and the depth to the Floridan Aquifer. In this area, the top of the limestone is encountered 20 to 40 feet below mean sea level, and the Hawthorn

Formation semi-confining unit and Cooper Marl confining unit are thin to nonexistent (Dames and Moore, 1986).

2.4 BIOLOGICAL AND ECOLOGICAL PROFILE

The MCAS Beaufort region is characterized by several major plant communities including temperate evergreen forest, maritime forest, pine forest and salt marsh (Dames and Moore, 1986). The majority of the drier upland portion of the MCAS Beaufort property contains pine forests. Temperate evergreen forests are present in the low areas on the property and along the waterline on the southern and eastern margins of the property.

The temperate evergreen forest is characterized by evergreen oaks, other evergreen trees and shrubs, and several runner and vine species (Dames and Moore, 1986). The pine forest consists primarily of various pine trees and occasionally small oaks in the understory. Pine forests in this region may support large quantities of fauna, including whitetail deer, wild turkey and bobwhite quail.

The salt marshes, which are typically present at the mouths of creeks and rivers, contain shallow flat areas created through deposition of silt, fine-grained sand and organic matter (Dames and Moore, 1986). These areas provide favorable conditions for salt-tolerant marsh grasses (cordgrasses, black needlerush and saltgrass) to flourish. Additionally, the tidal marshes support a large quantity of fish and crustaceans, and the protected shallows and nutrient rich nature of the tidal marshes provide favorable spawning and nursery areas for many saltwater species. The fauna in the marshes are an important food source for fish, wildlife and humans. Various animals, including raccoons, mink, river otters, herons, egrets, various shorebirds and gulls, brown pelicans, migratory ducks and various fish prey on the fish and crustaceans that inhabit the marshes.

There are no designated critical habitat areas in the MCAS Beaufort area.

2.5 GROUNDWATER PATHWAY

2.5.1 HYDROGEOLOGIC SETTING

A shallow, unconfined surficial aquifer is present within the Quaternary deposits and the water table is typically encountered from 5 to 10 feet below ground surface (Dames and Moore, 1986). Changes in recharge, evaporation and transpiration cause significant fluctuations in the water table. The hydraulic conductivity was calculated to be 0.85 feet per day (Dames and Moore, 1986). Flow

within the shallow aquifer is generally toward the nearest surface water body where groundwater discharge occurs. The hydraulic gradient in the surficial aquifer is typically low to almost flat.

The saturated portion of the Tertiary Limestone, also referred to as the Floridan Aquifer, is the principle source of groundwater for drinking water and industrial uses in the coastal plains of Georgia and southern South Carolina (Dames and Moore, 1986). Groundwater in the Floridan Aquifer occurs in openings or cavities in the limestone. The aquifer consists of five permeable zones that are separated by less permeable rocks; two of these zones are present in the MCAS Beaufort area. The permeable zones present beneath MCAS Beaufort are referred to as the Upper and Lower Hydrogeologic Units. The Upper Hydrogeologic Unit is unconfined and is relatively thin due to the presence of the Beaufort Arch (Dames and Moore, 1986). The thickness of the unit ranges from 25 to 100 feet in the area, and thins to the north and thickens to the south. As mentioned above, the Hawthorne Formation, where present, acts as a semi-confining unit between the unconfined shallow aquifer and the underlying Floridan aquifer. At MCAS Beaufort, the Quaternary deposits directly overlie the Floridan Aquifer where the Hawthorn Formation is absent (Dames and Moore, 1986). The area under MCAS Beaufort has been identified as a recharge zone for the Floridan Aquifer due to the lack of a confining unit.

The Lower Hydrogeologic Unit is a complex of aquifers and confining beds. This unit is less permeable than the upper unit and salt water intrusion is common (Dames and Moore, 1986).

2.5.2 GROUNDWATER RECEPTORS

Before approximately 1960, potable water for MCAS Beaufort was supplied from water supply wells located on base. Beginning in the 1960s, all potable water for the base has been supplied by BJWSA. The water supply wells formerly utilized at MCAS Beaufort were officially closed in 2008. BJWSA maintains two water treatment plants, and drinking water for Beaufort is supplied by the Chelsea Plant (BJWSA, 2017). Due to saltwater intrusion in the area, water for the treatment plant is primarily supplied by the Savannah River. During periods of high water demand, additional water is extracted from the Floridan Aquifer via water supply wells in the Bluffton, Hardeeville and Levi areas. Properties are required to connect to BJWSA water lines, where available (Arcadis/Malcolm Pirnie, 2013). No drinking water sources were identified within one-mile downgradient of potential PFAS release areas. A summary of the well located within a 1-mile radius is provided below. A communication log for **AECOM's BJWSA inquiry** is included in Appendix G.

The two EDR reports prepared for SWMU 12, and SWMU 13, SWMU 36 and UXO 3 as part of DASN (E) Policy Memo, 20 June 2016 identified 57 groundwater wells within one-mile of SWMUs 12, 13, 36 and UXO 3. The wells include 36 observation wells, 5 public supply wells, 5 unused wells, 5 wells

of unknown use, 2 abandoned wells, 2 standby wells, 1 industrial well, and 1 domestic well. Information regarding these wells is provided below.

- Five public supply wells, two standby wells and one well of unknown use are located on the MCAS Beaufort property. It is confirmed that potable water at MCAS Beaufort is provided by BJWSA and water supply wells are not used for potable water.
- Observation wells are for monitoring purposes and are not used for potable water.
- The remainder of the wells identified in the EDR reports are located upgradient from suspected PFAS release sites.

A search of the SC Well inventory was completed for a 1-mile radius around each suspected PFAS release area identified during the preparation of this PA. In addition to the wells identified in the EDR reports, 3 industrial wells, 2 domestic wells and 3 public supply wells were identified downgradient and within 1-mile of a suspected PFAS release site. Information regarding these wells is provided below.

- Three industrial wells are in the general downgradient direction of a potential PFAS release site. The wells are separated from the potential release area by Albergottie creek. BJWSA has confirmed that the property has an active water account (Appendix G).
- One public supply well and one domestic well are located on the MCAS Beaufort property. It is confirmed that potable water at MCAS Beaufort is provided by BJWSA and these wells are not used for potable water (Appendix G).
- One domestic well is located in the general downgradient direction of a potential PFAS release site. The well is separated from the potential release area by Albergottie creek. BJWSA confirmed that the property has an active water account (Appendix G).
- One public supply well owned by Grays Hill Trailer park is located in the general downgradient direction of a potential PFSA release site. BJWSA confirmed that all of the properties in the mobile home park have active water accounts (Appendix G).
- One public supply well owned by Roosevelt Chaplin is located in the general downgradient direction of a potential release site. BJWSA confirmed that the property has an active water account (Appendix G).

AECOM also contacted BJWSA to confirm that properties located on county maintained roads within 1-mile of a suspected PFAS release have active water accounts. BJWSA customer service confirmed that addresses on these roads have active water accounts. A communication log for the BJWSA inquiry is included in Appendix G.

2.6 SURFACE WATER PATHWAY

2.6.1 HYDROLOGIC SETTING

MCAS Beaufort is located in an environmentally sensitive tidewater area in a low-lying coastal plain with extensive surface water features in the immediate vicinity, including marshes and tidal creeks (Dames and Moore, 1986). Approximately 50 percent of the installment property is bordered by these surface water features; the base is bounded by Brickyard Creek and adjacent tidal marshes to the east, and by Albergottie Creek and tidal wetlands to the south. To the east of MCAS Beaufort, these creeks join to form the Beaufort River. The Beaufort River flows south for approximately 12 miles where it merges with the Broad River into the Port Royal Sound. The Port Royal Sound enters the Atlantic Ocean approximately 4 miles downstream of the Beaufort River. The marshes make up about 15 percent of the property and are generally located within a few thousand feet from any point on MCAS Beaufort. Periodic flooding of the marshes can occur as a result of tidal influence.

Groundwater in the surficial aquifer discharges into the surface water bodies. Additionally, surface drainage from the Air Station empties into Brickyard Creek and Albergottie Creek. The storm sewer system onsite collects surface runoff and discharges to a tidal stream that drains into Albergottie Creek.

2.6.2 SURFACE WATER RECEPTORS

There are no drinking water intakes located downstream of MCAS Beaufort.

The salt marshes support a large quantity of fish and crustaceans that are utilized as a food source for fish, wildlife and humans, and recreational fishing is common practice in the surface waters of the Beaufort area. Aquatic species in this area include crabs, shrimp, oysters, and various fish including red drum, spotted seatrout, southern flounder and striped mullet, among others (Dames and Moore, 1986). Additionally, a wide variety of fish rely on the wetlands and downstream estuaries for spawning.

Extensive wetlands border the MCAS Beaufort property. Several endangered or threatened species of bird may occur in the Beaufort area including **the southern bald eagle, woodstork, Bachman's warbler, Kirtland's warbler, eskimo curlew, and the eastern brown pelican** (Dames and Moore, 1986, USFWS, 2018 and SCDNR, 2015).

2.7 SOIL EXPOSURE AND AIR PATHWAYS

The majority of the soil at MCAS Beaufort is heavily vegetated with grass, pine forest and temperate evergreen forest. The perimeter of the property is enclosed by a fence, and access to the property is restricted by a guarded gate. Additionally, access to the flightline and several operational areas require special clearance to gain entry.

2.7.1 SOIL AND AIR RECEPTORS

Soil and air receptors at MCAS Beaufort are limited. Restricted access to the base limits human receptors to construction workers involved in any future development. Extensive wetlands border the property. Additionally, Bald Eagle habitats may occur on base.

3.0 INVESTIGATION SUMMARY

This section provides a description of the activities conducted as part of this PA. AECOM conducted a records search and document review to identify and evaluate sites across MCAS Beaufort where PFAS may have been historically used, stored, disposed of, and/or released. Interviews with environmental, fire and maintenance personnel were completed to verify existing knowledge and to identify additional locations of potential PFAS-related areas.

3.1 REVIEW OF RECORDS

A records review was initiated in March 2018 and included using the Internet to obtain reports, news articles, historical images and other available information to aid in documenting the use, storage, disposal and release of PFAS containing materials at MCAS Beaufort. Additionally, the Internet was utilized to obtain information regarding drinking water and the environmental setting at MCAS Beaufort and the surrounding area. Searches were conducted using the Navy's Administrative Record (AR), EDR, AECOM archives, and general search engine. In addition, documents provided by MCAS personnel were reviewed and are included in Appendices A through E. A summary of the research is included below. An annotated bibliography outlining the documents reviewed is included as Appendix F.

3.1.1 NAVY ADMINISTRATIVE RECORD

The online Navy AR was utilized to obtain documents regarding environmental testing and sampling conducted at MCAS Beaufort. A total of 2,076 documents were available for review, including 937 reports. An assessment of the documents available on the Navy AR was conducted to evaluate potential areas where PFAS containing materials may have been used, stored, disposed or released.

The Initial Assessment Study (IAS) (Dames and Moore, 1986) and the RCRA Facility Assessment Report (A.T. Kearney, Inc., 1986) provided general background information (e.g., site history, setting, and facility operations) for existing RCRA sites (SWMUs and AOCs) located within MCAS Beaufort. Site specific reports from the Navy AR were reviewed to gather general background information for SWMUs and AOCs that were identified after the completion of the IAS in 1986. Additionally, the Navy AR was searched using the keywords crash, fire, AFFF and foam.

A more thorough document review of site specific reports was performed for sites where PFAS impacts were suspected based on general background information. The reports available for review included RCRA Facility Investigation reports, groundwater and soil sampling reports, Tier I and II

Assessment reports, Corrective Measure Study reports, Remedial Investigation reports, various work plans, Phase I and II reports, Statement of Basis reports, etc.

3.1.2 ENVIRONMENTAL DATA RESOURCES, INC.

Two EDR reports for SWMU 12, and SWMU 13, SWMU 36 and UXO 3 were prepared as part of DASN (E) Policy Memo, 20 June 2016. AECOM reviewed these reports to collect information regarding drinking water sources within one-mile of potential PFAS release areas.

3.1.3 AECOM ARCHIVES

AECOM archive documents include previously conducted environmental assessments and investigative reports that are not currently available on the Navy AR. A review of these reports was conducted to identify historical activities and operations at the site. Documents from the AECOM archives provided general background information for areas of known or suspected use, storage or release of PFAS containing materials.

3.1.4 GENERAL SEARCH ENGINE

A general search engine was utilized to search the Internet for the following keywords in combination with MCAS Beaufort: fire, crash, plane crash, accident, aqueous film forming foam, foam, and AFFF. The search yielded news articles with information pertaining to fires and crashes where MCAS Beaufort was involved in the emergency response efforts.

The search engine was also utilized to obtain historical aerial photographs, maps pertinent to the environmental setting and drinking water sources. The University of South Carolina Thomas Cooper Library Maps Department was utilized to obtain historical aerial photographs dating back to 1939. The U.S. Fish and Wildlife Service website was utilized to obtain wetland maps and critical habitat maps, and the Federal Emergency Management Act website was utilized to obtain floodplain maps. The South Carolina Department of Natural Resources water well inventory was utilized to obtain information about drinking water supplies within one-mile of suspected PFAS release areas. The map search function of the general search engine was utilized to identify schools and daycares within one-mile of MCAS Beaufort.

3.1.5 ADDITIONAL DOCUMENTS

Site personnel provided additional documents regarding the use, storage, disposal and release of AFFF at MCAS Beaufort. The following documents provided by site personnel were reviewed by AECOM, and are provided in Appendices A through E, respectively:

- AFFF Inventory summarizing AFFF installed in fire suppression systems and trucks, and containerized AFFF stored in warehouses. The inventory includes quantities of AFFF at each location and contact information for the managers of the locations (Appendix A).
- AFFF Spill Reports dating back to 2014. The reports outline details about the release including date and time, location, personnel involved, description of the release, estimated volume of AFFF released, cause of release and corrective action (Appendix B).
- MCAS Beaufort General Development Map showing the current layout of the base including buildings, runways, roads and water features (Appendix C).
- AFFF Waste Disposal Manifests including manifests for bulk disposal and a summary table for non-bulk disposal (Appendix D).
- Fire response narrative for the 2019 fire response (Appendix E).

3.2 SITE INTERVIEWS

AECOM conducted interviews with persons familiar with the installation to document their knowledge of former and current use, handling, storage or releases of PFAS containing materials at MCAS Beaufort. A summary of the interviews is provided below, and records of these interviews, phone calls and electronic mail exchanges with Site personnel are available in the communication logs in Appendix G.

On May 9, 2018 AECOM conducted in person interviews with an ARFF employee, the MCAS Beaufort Environmental Compliance Supervisor, and the MCAS Installation Restoration (IR)/Underground Storage Tank (UST) manager. AECOM conducted telephone interviews with the following personnel:

- Fire Department Chief (May 23, 2018),
- Public Works Engineering Director (July 13, 2018),
- Townsend Bombing Range Program Manager (July 30, 2018),
- Hazardous Materials Manager (February 12, 2019),
- Lead Fire Inspector on (February 15, 2019),
- ARFF Admin Chief (March 5, 2019),
- ARFF Material Chief (March 6, 2019),
- Site Safety Manager, Building 617 (March 11, 2019), and
- Safety and Environmental Non-Commissioned Officer (March 13, 2019).

Additional information, follow up questions and requests for supporting documents were exchanged via electronic-mail between AECOM and the following personnel:

- ARFF Fire Chief (May 23, 2018),
- Environmental Compliance Supervisor (May 22 and 24, 2018 and February 28, 2019),
- Fire Department Chief (June 21, 2018),
- Utilities Director (February 28, 2019),
- Environmental Engineer (February 28, 2019), and
- IR/UST Manager (March 1 and 28, 2019).

Following the initial round of interviews, the Environmental Compliance Supervisor provided AFFF spill, storage and disposal records, and a facility map via electronic-mail. The ARFF Admin Chief provided the fire response narrative for the 2019 incident via electronic email.

3.3 SITE WALK

Site walks were conducted over the course of the investigation to inspect certain areas identified during the literature review, records search and interview process. On May 9, 2018 sites accessible without special clearance were inspected, including temporary waste storage areas, former landfills and former disposal areas. Additionally, AECOM was escorted by an ARFF employee to perform site walks at the current FTA and the ARFF Station (Building 1313). On March 12, 2019 AECOM performed site walks at AFFF storage locations to gather information regarding general housekeeping and storage practices.

Information gathered during site walks was used to evaluate the potential for release of PFAS containing materials and to aid in recommending a path forward for the area. Information gained during the site walks is presented in the site-specific CSMs.

4.0 FINDINGS AND RECOMMENDATIONS

Based on a review of site documents, numerous areas were identified where materials containing PFAS were potentially used, stored, disposed, and/or released at MCAS Beaufort. The following section is organized by site and presents the CSM for each potential PFAS source area. The CSMs provide a brief operational history relative to the potential presence of PFAS. Tables 1 and 2 summarize this information and provide a recommended path forward for each identified area. Figure 1 illustrates the location of each area identified on MCAS Beaufort. Figures 2 through 7 provide a more detailed illustration of the identified areas. The recommended path forward for all of these areas is provided in Section 5.0.

4.1 FIRE TRAINING AREA SITE

The FTA Site is located to the south of Runway 14 and to the north of Runway 05, as shown in Figure 2. The FTA Site for this PA includes several previously identified SWMUs and AOCs, and a mobile de-foaming unit, which will be discussed individually below. This site includes current and former fire training pits, waste disposal areas and an oil water separator (OWS). Individual SWMUs and AOCs are shown within the greater FTA Site on Figure 2.

As described below, the SWMUs and AOCs included in the greater FTA Site are areas of known storage, use and release of AFFF and AFFF impacted materials. AFFF impacted materials may include fuels mixed with AFFF and materials coated with AFFF from firefighting training exercises. The Navy recommends that the FTA Site be considered for assessment of PFAS.

Mobile De-foaming Unit

In addition to the SWMUs and AOCs discussed below, another potential source of PFAS contamination is the portable de-foaming trailer located on the asphalt adjacent to the firefighting training pit. During interviews with site personnel it was indicated that the de-foaming trailer is used to temporarily store AFFF in a plastic tank while major repairs are completed on trucks with onboard AFFF storage tanks (Appendix G). The trailer has secondary containment consisting of drip pans, and absorbent diapers placed around the trailer during de-foaming. During an interview, an ARFF employee stated that to his knowledge AFFF has not been spilled during de-foaming activities (Appendix G). During a separate interview with other site personnel it was stated that AFFF has been observed on the asphalt following de-foaming activities.

Due to the known storage and release of AFFF, the de-foaming unit area is recommended to be included in the greater FTA Site PFAS investigation.

SWMU 13 – Western Fire Training Pits

The Western Fire Training Pits (SWMU 13) are located approximately 200 feet south of the current fire training pits. SWMU 13 consists of a former FTA, which included a main burn pit and a series of smaller shallow burn pits (A.T. Kearney, Inc., 1986). The main burn pit was constructed on asphalt and covered an estimated area of 100 feet by 15 feet. This pit was used for larger scale training exercises. . The smaller pits were present adjacent to the runway and were used for firefighting training exercises using small extinguishers. There are no records of what types of extinguishers or AFFF were used during training exercises.

The main burn pit was operational for a total of two years in the late-1960's and late-1970's (A.T. Kearney, Inc., 1986). No specific information about the operational period for the smaller burn pits was available. However, a small burn pit was in use during the preparation of the 1986 RCRA Facility Assessment (A.T. Kearney, Inc., 1986).

Due to the general timing of the operational time of SWMU 13, it is possible that the AFFF used during training contained PFAS. Therefore, SWMU 13 is recommended to be included in the greater FTA Site PFAS investigation.

SWMU 18 – Current Fire Training Pits

The Current Fire Training Pits (SWMU 18) are located on the western end of the former east-west runway. Three iterations of FTAs have been constructed at SWMU 18 since the 1970's. The first FTA was built on top of the asphalt of the former runway and consisted of a dirt berm that was filled with fuel and ignited (USACE, 1997). No other containment measures were indicated in historic documents.

The second FTA pit was constructed in 1982 on top of the previous FTA. This pit consisted of inner and outer concrete berms and an OWS (USACE, 1997). During training, the inner berm was filled with water and a thin layer of fuel was added and ignited. The outer berm was a 60 feet long rectangular containment measure used to capture any overflow of fuel or extinguishing material. Waste from the training pit was gravity fed to the OWS after use, and water was eventually discharged to the sanitary sewer system. A drainage trench located 100 feet to the west of the pit served as a bypass to prevent overflow of the OWS in the event of heavy rain. Records indicate one spill of water/fuel mixture occurred in the mid-1980's, during which the mixture flowed into the trench. Corrective measures completed in response to the release included excavation and disposal of surficial soils in the area (USACE, 1997). Additionally, visual evidence of releases from the training pit were noted in the drainage ditch in 1986 (A.T. Kearney, Inc., 1986). The second FTA was demolished in November 1995 and was replaced with the current FTA.

The current FTA consists of a concrete platform with an approximately 5 inch deep circular depression encompassing a mock jet, a concrete berm and an OWS. During training exercises the depression is filled with water and oil is added and ignited. The pit drains to an OWS before discharging to the sanitary sewer. Due to deterioration of the concrete beneath the mock jet, modifications to the FTA were completed in 2008 which included power washing the concrete, removing and replacing the concrete in the circular depression and installing new piping (NREAO, 2008).

ARFF personnel indicated that AFFF is typically only used during emergency response activities and is rarely used during routine training exercises (Appendix G). According to site personnel, AFFF was last used for training exercises in 2007 by ARFF and in 2014 by the Fire Department (Appendix G). According to the Fire Department Chief, when AFFF was used during training exercises in the past no effort was made to contain or clean up used AFFF that was not contained in the FTA pit (Appendix G). Additionally, environmental staff commented on seeing AFFF on the ground at the FTA in the past. The area surrounding the FTA is asphalt and grass. Visual inspection of the asphalt during a site visit on May 9, 2018 confirmed that the asphalt has cracks.

Due to known releases of FTA waste materials and known use and release of AFFF at SWMU 18, it is recommended to be included in the greater FTA Site PFAS investigation.

SWMU 63 – Oil Water Separator (CFR Burn Pit)

The OWS associated with the Crash Fire Rescue (CFR) burn pit (SWMU 63) has an associated UST to collect the water and fuel used during CFR training. Once the UST is full, the waste is transferred to the OWS. Site personnel reported that standard procedure following a training exercise during which AFFF is used includes draining the pit into the OWS (Appendix G).

In a 2007 correspondence between MCAS Beaufort personnel and the South Carolina Department of Health and Environmental Control (SCDHEC), it was reported that the pump on the UST failed and a release of fuel and water occurred. The majority of the release was contained on the concrete pad using an earthen berm; however, some of the release flowed onto the grassy area surrounding the concrete pad.

During the March 2008 FTA modifications, the concrete in the firefighting training pit was power washed. Water containing debris from the concrete went into the drain in the center of the burn pit that flows to an OWS. Debris from the power washing may have been impacted by AFFF.

Based on the activities performed in the area, it is likely the OWS was impacted by AFFF. Due to the release from the OWS UST that flowed onto the adjacent grassy area, the area around the OWS is also recommended to be included with the greater FTA Site for PFAS assessment.

AOC P – Suspect Disposal Area (West of the ARFF Training Site)

AOC P is located approximately 200-300 feet to the north and west of the current FTA and covers an area of about 0.5 acres. Historically, rusted and dented 5- and 55-gallon product containers with hazardous material labels and construction debris were scattered over the area (A.T. Kearney, Inc., 1986). During a site visit in 2011, debris was further identified to include jet components, metal debris and concrete/asphalt (Tetra Tech, 2016). The exact origin of the debris is unknown, but field evidence and the close proximity to the FTA suggest that it may have originated from or close to the FTA. The asphalt pieces appeared to have been removed from near-by and pushed into the tree line and jet components may have been associated with firefighting training activities. The debris may have been contaminated by AFFF and resulted in the potential release of PFAS into soil and groundwater.

The debris in AOC P was removed in April and May 2016 (Tetra Tech, 2016). AOC P was granted NFA by SCDHEC in August 2016 (SCDHEC, 2016). However, in terms of PFAS contamination, this site is recommended to be included in the greater FTA Site PFAS Investigation.

AOC O – Waste Disposal Area (South of Current Fire Training Pit)

AOC O is located approximately 200-300 feet south of the current FTA, and consists of two areas that were historically used as areas for unauthorized disposal of debris (A.T. Kearney, Inc., 1986). During a site inspection in 1985, one area covered approximately 100 square feet, and was grassy with stressed vegetation and no visible debris. The second area covered several hundred square feet, and there was visible debris present including motors and empty hazardous material containers. The exact origin of the debris is unknown, but the close proximity to the FTA may indicate that it originated from or close to the FTA, and the motors may have been associated with firefighting training activities. The debris may have been contaminated by AFFF and resulted in the potential release of PFAS into soil and groundwater.

Based on the proximity to the FTA and the type of debris observed in this area, AOC O is recommended to be included with the greater FTA Site for PFAS assessment.

4.2 HANGAR 1331

Hangar 1331 is located at the intersection of the former east-west and abandoned north-south runways, as shown in Figure 2. The hangar, referred to as the hush house, was constructed in the mid-1990's and acts as the aircraft acoustical enclosure. The area surrounding the hangar is covered with concrete and grassy areas.

The hangar is outfitted with floor drains that divert to an OWS, and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergottie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system.

Hangar 1331 is equipped with a fixed fire suppression system that consists of an AST containing AFFF, and associated piping and sprinklers throughout the hangar. The fixed fire suppression system at Hangar 1331 contains 1,600 gallons of AFFF. At the time of this report, the brand and manufacture date of the AFFF is unknown.

On July 25, 2011 a release of AFFF occurred at Hangar 1331. Spill records indicate that the valves on the AFFF AST leaked and approximately 2 gallons of AFFF escaped the containment berm and entered the floor drain (Appendix B). The spill was cleaned up using absorbent cotton mats and recyclable blue mats. The drain was covered to prevent additional AFFF intrusion and absorbent booms were placed around the inside perimeter of the berm. Following the release, the valves were tightened to prevent future releases.

The closest surface water body is a freshwater forested/shrub wetland located approximately 0.8 miles to the north-northwest. No drinking water sources are located within 1-mile downgradient of the hangar. No potential for exposure via soil, air or groundwater was identified. Potential migration to surface water receptors is likely due to AFFF entering the floor drain and eventually to the sanitary sewer line which, prior to 2011, discharged to the marsh.

Hangar 1331 is an area of known historic storage, use, and release of AFFF. Based on this information, Hangar 1331 is recommended to be considered for PFAS assessment.

4.3 1991 CRASH SITE

According to site personnel, a jet crash occurred in 1991 on the northern end of Runway 14, as shown in Figure 2 (Appendix H). The Fire Department Chief stated that AFFF was used during the emergency crash response (Appendix G). No containment or cleanup measures were put into place during or following the use of AFFF. Crash records and emergency response reports were not

available at the time of the preparation of this PA. Currently, the location of the crash is covered by asphalt and grass.

The closest surface water body is a freshwater forested/shrub wetland and freshwater pond located approximately 0.25 miles to the northwest. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air, surface water or groundwater was identified.

The 1991 Crash Site is an area of known release of AFFF. Based on this information, the 1991 Crash Site is recommended to be considered for assessment of PFAS.

4.4 COMPASS ROSE CRASH SITE

According to site personnel, a jet crash occurred in 2003 at Compass Rose on Runway 23, as shown in Figure 3. Site personnel reported that AFFF was used during the emergency crash response (Appendix G). No containment measures were in place during AFFF use and no cleanup of AFFF was completed following use. However, excavation of the area was completed to remove soil impacted by fuel released during the crash. Crash records and emergency response reports were not available at the time of the preparation of this PA. Currently, the location of the crash is covered by asphalt and grass.

The closest surface water bodies are a freshwater forested/shrub wetland, located approximately 0.2 miles to the south, and a estuarine and marine wetland located approximately 0.25 miles to the north. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air or groundwater was identified. A natural drainage exists adjacent to the crash site and flows towards the fresh water emergent wetland; therefore, potential migration to surface water receptors is likely.

The Compass Rose Crash Site is an area of known release of AFFF. Based on this information, the Compass Rose Crash Site is recommended to be considered for assessment of PFAS.

4.5 WEST RAMP SPILL AREA

The West Ramp Spill Area is located adjacent to Runway 5 and includes SWMU 69 (West Fuel Vessels and Drainage Systems), as shown in Figure 4. The fuel vessels and associated piping are located northwest of buildings 414 and 728, and are used for aircraft refueling operations. The process fuel vessels are located adjacent to the runways on bermed concrete pads (A.T. Kearney, Inc., 1986). The pads drain to the storm water drainage system located next to the unit, which eventually discharges to the marsh.

The Fire Chief indicated that a fuel spill at the West Ramp Area occurred in 2004 (Appendix G). The spill response included applying AFFF to the fuel to contain the release and to prevent ignition of the fuel. The spill was cleaned up using spill absorbent materials. Release and response records were not available at the time of PA preparation. The brand and manufacture date of the AFFF used during the response are unknown. Approximately 50% of the west ramp area is covered by grass and 50% is covered by concrete. It is possible that AFFF entered the subsurface through cracks that may have been present in the concrete and/or through the adjacent grassy areas.

The closest surface water body is a freshwater forested/shrub wetland located approximately 0.5 miles to the north. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall; therefore, potential migration to surface water receptors is likely.

The West Ramp Area is an area of known use and release of AFFF. Due to the timing of the AFFF use, it is likely that the AFFF contained PFAS. Based on this information, the West Ramp Area is recommended to be considered for assessment of PFAS.

4.6 EAST RAMP SPILL AREA

The east ramp area is located adjacent to Runway 14 and includes SWMU 68 (East Fuel Vessels and Drainage Systems), as shown in Figure 4. The fuel vessels and associated piping are located northeast of buildings 3060 and 729, and are used for aircraft refueling operations. The process fuel vessels are located adjacent to the runways on bermed concrete pads. The pads drain to the storm water drainage system located next to the unit, which eventually discharges to the marsh..

The Fire Chief indicated that a fuel spill on the east ramp area occurred in 1996 (Appendix G). The spill response included applying AFFF to the fuel to contain the release and to prevent ignition of the fuel. The spill was cleaned up using spill absorbent materials. Release and response records were not available at the time of PA preparation. The brand and manufacture date of the AFFF used during the response are unknown. Approximately 50% of the east ramp area is covered by grass and 50% is covered by concrete. It is possible that AFFF entered the subsurface through cracks that may have been present in the concrete and/or through the grassy areas via rain water runoff.

The closest surface water body is a freshwater forested/shrub wetland located approximately 0.3 miles to the east. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is

diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall; therefore, potential migration to surface water receptors is likely.

The East Ramp Area is an area of known release of AFFF. Due to the timing of the AFFF use, it is likely that the AFFF contained PFAS. Based on this information, the East Ramp Area is recommended to be considered for assessment of PFAS.

4.7 HANGAR 414

Hangar 414 is located on Norris Avenue and situated along the flight line, as shown in Figure 4. Hangars 414 and 415 were built in the early-**1950's as two separate hangars**, and the two were bridged in the **1970's to create one hangar. The bridged hangar was** named Hangar 414, which is primarily used for storage and maintenance of aircraft, and runway support (Advent Environmental Inc., 2005). The area surrounding Hangar 414 is primarily covered with concrete and asphalt, and small grassy areas exists at the corners of the hangar. Based on descriptions of hazardous waste temporarily stored adjacent to the hangar (SWMU 19, SWMU 20, SWMU 21, SWMU 31 and SWMU 32), activities at Hangar 414 involved the use of solvents, paint, lube oils, Jet Propellant (JP)-5 fuel, hydraulic fluids, and other miscellaneous products associated with routine aircraft maintenance (A.T. Kearney, Inc., 1986). In addition, other materials potentially containing PFAS were historically used in Hangar 414, such as aviation hydraulic fluid.

Hangar 414 is equipped with a fixed fire suppression system that consists of an AST containing AFFF in the mechanical room, and associated piping and sprinklers throughout the hangar. The fixed fire suppression system at Hangar 414 contains 6,000 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown (Appendix A).

The hangar is outfitted with 12 to 18 inch wide floor drains (SWMU 61) and drainage grates that extend the length of the hangar floor (A.T. Kearney Inc., 1986). All interior drain lines divert to an OWS (SWMU 82), located centrally on the southeastern side of the building, and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergottie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release, or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms (Appendix G). Efforts are made to close drains as soon as possible after the release is discovered. The Natural Resources and Environmental Affairs Office (NREAO) cleans up the release and waste is disposed of properly.

On November 11, 2004 a release of AFFF from the fire suppression system was reported. According to site personnel, a full system release occurred causing approximately 6,000 gallons of AFFF to be released into the hangar (Appendix G). No spill response records are available for this release.

On February 12, 2016 the fire department reported a release of AFFF which occurred when the AFFF AST was pumped down to avoid freezing damage (Appendix B). Approximately 60 gallons of AFFF were released. The AFFF was removed via vacuum truck, temporarily stored in Tank 979.

Spill records indicate that on October 27, 2016 a leak in one of the AFFF cannons was reported and about 30 minutes later the cannons malfunctioned and released approximately 275 gallons of AFFF (Appendix B). The AFFF was contained immediately following the release, and clean up occurred on the morning of October 28, 2016. The specifics of clean up were not available at the time of the preparation of this PA.

The closest surface water body is a freshwater

pond (storm water pond) located approximately 0.5 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 414 is an area of known storage and release of AFFF. Based on the nature of the release and the typical release response in the hangars, impacts to the subsurface may have occurred through joints in the slab, through grassy areas adjacent to the hangar, or through the floor drains, OWS, and associated sanitary sewer. Based on this information, Hangar 414 is recommended to be considered for assessment of PFAS.

4.8 HANGAR 1084

Hangar 1084 is located directly south of Taxiway A and situated along the flight line, as shown in Figure 4. Hangar 1084 was built in the late-1980's as a non-destructive investigation x-ray booth.

Currently, operations at Hangar 1084 include general aircraft maintenance and occasional aircraft x-ray activities. The area surrounding the hangar is covered with concrete to the south and east, and grass to the north and west.

Hangar 1084 is equipped with a fixed fire suppression system that consists of a 2,000 gallon AST containing AFFF on the hangar deck, and associated piping and sprinklers throughout the hangar. According to current AFFF storage records, the brand and manufacture date of the AFFF are unknown (Appendix A). In addition, other materials potentially containing PFAS were historically used in Hangar 1084, such as aviation hydraulic fluid.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms (Appendix G). Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release and waste is disposed of properly.

On March 3, 2018 the fire department reported a release of approximately 320 gallons of AFFF at Hangar 1084. The release occurred when AFFF was inadvertently released from cannon. The fire department cleaned the hangar with fresh water. According to the spill report, Ansulite 3% was the AFFF released (Appendix B). According to unused inventory records for AFFF, Ansulite 3% AFFF stored on site has manufacture dates of pre-June 2016 and November 2011 (Appendix A).

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.6 miles to the east-southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 1084 is an area of known storage and release of AFFF. Based on the nature of the release and the typical release response in the hangars, impacts to the subsurface may have occurred through joints in the slab, through grassy areas adjacent to the hangar, or through the floor drains, OWS, and associated sanitary sewer. Based on this information, Hangar 1084 is recommended to be considered for assessment of PFAS.

4.9 HANGAR 418

Hangar 418 is located on Capers Street and situated along the flight line, as shown in Figure 4. The hangar was built in the late-**1950's** and is primarily used for storage and maintenance of aircraft, and runway support. The area surrounding Hangar 418 is primarily covered with concrete to the

north and south, and grassy areas to the east and west. Based on descriptions of hazardous waste temporarily stored adjacent to the hangar (SWMU 26, SWMU 39 and AOC D), activities at Hangar 418 involve the use of solvents, paint, lube oils, JP-5 fuel, hydraulic fluids, and other miscellaneous products associated with routine aircraft maintenance (A.T. Kearney, Inc., 1986). In addition, other materials potentially containing PFAS were historically used in Hangar 418, such as aviation hydraulic fluid.

Hangar 418 is equipped with a fixed fire suppression system that consists of an AST containing AFFF in the mechanical room, and associated piping and sprinklers throughout the hangar. The fixed fire suppression system AST at Hangar 418 contains 3,200 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown (Appendix A).

The hangar is outfitted with 12 to 18 inch wide floor drains (SWMU 61) and drainage grates that extend the length of the hangar floor (A.T. Kearney Inc., 1986). All interior drain lines divert to an OWS, located centrally on the southeastern side of the building, and eventually to sanitary sewer lines. Prior to 2011, sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergothie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release, or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel, common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms (Appendix G). Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release using vacuum trucks and waste is disposed of properly.

In December 2006, a release of AFFF from the fire suppression system was reported. According to spill records, the fire alarm was inadvertently set off by site personnel causing a full system release of AFFF, with the report stating that AFFF covered the entire hangar floor (Appendix B). No specifics about clean up activities are available for this release.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.56 miles to the east. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 418 is an area of known storage and release of AFFF. Based on the nature of the release and the typical release response in the hangars, impacts to the subsurface may have occurred through joints in the slab, through grassy areas, or through the floor drains, OWS, and associated sanitary sewer. Based on this information, Hangar 418 is recommended to be considered for assessment of PFAS.

4.10 HANGAR 2146

Hangar 2146 is located on the northwestern end of Simpson Street and is situated along the flight line, as shown in Figure 4. The hangar was built in the early-**2010's** and is primarily used for storage and maintenance of aircraft, and runway support. The area adjacent to the aircraft entrance is covered with concrete, and grassy areas surround the rest of the hangar.

Hangar 2146 is equipped with a fixed fire suppression system that consists of an AST containing AFFF, and associated piping and sprinklers throughout the hangar. The fixed fire suppression system AST at Hangar 2146 contains 1,600 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown (Appendix B).

The hangar is outfitted with 12 to 18 inch wide floor drains and drainage grates that extend the length of the hangar floor. All interior drain lines divert to an OWS and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergottie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release, or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms. Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release and waste is disposed of properly.

In 2015, a release of AFFF from the fire suppression system was reported. According to site personnel, the fire alarm was inadvertently set off causing approximately 1,200 gallons of AFFF to be released (Appendix G). No spill or response records are available for this release.

The closest surface water body is a freshwater pond (storm water pond) located approximately 200 feet to the east. No drinking water sources are located within 1-mile downgradient of the site. No

potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 2146 is an area of known storage and release of AFFF. Based on the nature of the release and the typical release response in the hangars, impacts to the subsurface may have occurred through joints in the concrete, grassy areas either at the time of the release, through the floor drains, OWS, and associated sanitary sewer. Based on this information, Hangar 2146 is recommended to be considered for assessment of PFAS.

4.11 FORMER HANGAR 416

Hangar 416 was located on the northern end of Gordon Street and was situated along the flight line, as shown in Figure 4. Hangar 416 was demolished in 2015 and replaced by Hangar 3060 in 2018. During operation, Hangar 416 was primarily used for storage and maintenance of aircraft, and runway support. The area surrounding Hangar 416 was covered with concrete to the northeast, northwest and southeast, and grassy areas on the corners and along the southwestern edge. Based on descriptions of hazardous waste temporarily stored adjacent to the hangar (SWMU 23, SWMU 24, SWMU 35 and SWMU 36), activities at Hangar 416 involved the use of solvents, paint, lube oils, JP-5 fuel, hydraulic fluids, and other miscellaneous products associated with routine aircraft maintenance (A.T. Kearney, Inc., 1986). In addition, other materials potentially containing PFAS were historically used in and adjacent to Hangar 416, such as aviation hydraulic fluid.

A mop washing sink and drying rack (AOC C) existed immediately adjacent to the southeastern corner of Hangar 416 and was in use for approximately 20 years (Tetra Tech, 2014). At this location, mops contaminated with paint wastes, oils, hydraulic fluids and JP-5 fuel were washed and allowed to hang dry on the rack. The materials that dripped from the mops during drying were allowed to drip onto the concrete below.

Hangar 416 was equipped with a fixed fire suppression system that consisted of an AST containing AFFF, and associated piping and sprinklers throughout the hangar. The capacity of the AST, and the brand and manufacture date of the AFFF are unknown. The AFFF in the AST would have been manufactured prior to 2015, as the building was demolished that year.

The hangar was outfitted with 12 to 18 inch wide floor drains (SWMU 61) and drainage grates that extended the length of the hangar floor (A.T. Kearney, Inc., 1986). All interior drain lines diverted to an OWS (SWMU 79), and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines

led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergottie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that entered the drainage system included rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could have entered the drain system during a release. The OWS also received wind-blown storm water (Tetra Tech, 2014).

There are no spill reports that reference Hangar 416 as the site of an AFFF release. However, the Fire Department Chief stated that to his knowledge a release of AFFF has occurred at every hangar on the flight line at some time in the past (Appendix G). The spill records obtained from site personnel only extend back to December 2006. Therefore, it is possible that a release at Hangar 416 occurred but a spill record was not available at the time of preparation of this PA.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.2 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 416 is an area of known storage of AFFF. Based on this information, Hangar 416 is recommended to be considered for assessment of PFAS.

4.12 HANGAR 728

Hangar 728 is located at the intersection of 2nd Avenue and Drayton Street and situated along the flight line, as shown in Figure 4. The hangar was **built in the 1950's** and is primarily used for storage and maintenance of aircraft, and runway support. The area surrounding Hangar 728 is primarily grassy areas, with concrete to the northwest. Based on descriptions of hazardous waste temporarily stored adjacent to the hangar (SWMU 33), activities at Hangar 728 involve the use of solvents, paint, lube oils, JP-5 fuel, hydraulic fluids, and other miscellaneous products associated with routine aircraft maintenance (A.T. Kearney, Inc., 1986). In addition, other materials potentially containing PFAS were historically used in Hangar 728, such as aviation hydraulic fluid.

Hangar 728 is equipped with a fixed fire suppression system that consists of an AST containing AFFF on the hangar deck, and associated piping and sprinklers throughout the hangar. The AST at

Hangar 728 contains 1,100 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown.

The hangar is outfitted with 12 to 18 inch wide floor drains (SWMU 61) and drainage grates that extend the length of the hangar floor (A.T. Kearney, Inc., 1986). All interior drain lines divert to an OWS, and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergottie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms. Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release and waste is disposed of properly.

On July 12, 2005 a release of AFFF from the fire suppression system was reported. According to site personnel, a full system release of approximately 1,100 gallons of AFFF occurred (Appendix G). No spill or response records are available for this release.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.5 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 728 is an area of known storage and release of AFFF. Based on the nature of the release and the typical release response in the hangars, impacts to the subsurface may have occurred through joints in the concrete, grassy areas either at the time of the release, through the floor drains, OWS, and associated sanitary sewer. Based on this information, Hangar 728 is recommended to be considered for assessment of PFAS.

4.13 HANGAR 729

Hangar 729 is located on Parks Avenue and situated along the flight line, as shown in Figure 4. The hangar was built in the late-**1950's** and is primarily used for storage and maintenance of aircraft, and runway support. The area surrounding Hangar 729 is primarily grassy areas, with concrete to the northeast. Based on descriptions of hazardous waste temporarily stored adjacent to the hangar (SWMU 22 and SWMU 34), activities at Hangar 729 involve the use of solvents, paint, lube oils, JP-5 fuel, hydraulic fluids, and other miscellaneous products associated with routine aircraft maintenance (A.T. Kearney, Inc., 1986). In addition, other materials potentially containing PFAS were historically used in Hangar 729, such as aviation hydraulic fluid.

Hangar 729 is equipped with a fixed fire suppression system that consists of an AST containing AFFF on the hangar deck, and associated piping and sprinklers throughout the hangar. The AST at Hangar 729 contains 1,100 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown.

The hangar is outfitted with 12 to 18 inch wide floor drains and drainage grates that extend the length of the hangar floor (A.T. Kearney, Inc., 1986). All interior drain lines divert to an OWS and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergoatie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release, or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms. Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release and waste is disposed of properly.

There are no spill reports that reference Hangar 729 as the site of an AFFF release. However, the Fire Department Chief stated that to his knowledge a release of AFFF has occurred at every hangar on the flight line at some time in the past (Appendix G). The spill records obtained from site personnel only extend back to December 2006. Therefore, it is possible that a release at Hangar 729 occurred but a spill record was not available at the time of preparation of this PA.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.3 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 729 is an area of known storage of AFFF. Based on this information, Hangar 729 is recommended to be considered for assessment of PFAS.

4.14 HANGAR 594

Hangar 594 is located on Calhoun Street and situated along the flight line, as shown in Figure 4. The building consists of the main hangar deck and a maintenance apron to the north. The hangar was built in the late-**1950's** and is primarily used for storage and maintenance of aircraft, and runway support. The area surrounding Hangar 594 is primarily covered with concrete, with a grassy area to the south. Based on descriptions of hazardous waste temporarily stored adjacent to the hangar (SWMU 25 and SWMU 38), activities at Hangar 729 involved the use of toluene, paint, engine lube oils, cutting oils, other lube oils, fuel, hydraulic fluids, and other miscellaneous products associated with routine aircraft maintenance (A.T. Kearney, Inc., 1986). In addition, other materials potentially containing PFAS were historically used in Hangar 594, such as aviation hydraulic fluid.

Hangar 594 is equipped with a fixed fire suppression system that consists of an AST containing AFFF in rooms 144 and 151, and associated piping and sprinklers throughout the hangar. The AST at Hangar 594 contains 3,200 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown.

The hangar is outfitted with 12 to 18 inch wide floor drains (SWMU 61) and drainage grates that extend the length of the hangar floor (A.T. Kearney, Inc., 1986). All interior drain lines divert to an OWS and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergottie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release, or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms. Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release and waste is disposed of properly.

There are no spill reports that reference Hangar 594 as the site of an AFFF release. However, the Fire Department Chief stated that to his knowledge a release of AFFF has occurred at every hangar on the flight line at some time in the past (Appendix G). The spill records obtained from site personnel only extend back to December 2006. Therefore, it is possible that a release at Hangar 594 occurred but a spill record was not available at the time of preparation of this PA.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.2 miles to the east. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Hangar 594 is an area of known storage of AFFF. Based on this information, Hangar 594 is recommended to be considered for assessment of PFAS.

4.15 BUILDING 1256

Building 1256 is located to the west of Hangar 2146 and situated along the flight line, as shown in Figure 4. The building was constructed in the early-**2000's** and is the corrosion control facility. Operations include repainting aircrafts and repairing damage to the composite structure of aircrafts. The area surrounding Building 1256 is covered with concrete to the east and west and grassy areas to the north and south.

Building 1256 is equipped with a fixed fire suppression system that consists of an AST containing AFFF in room 208, and associated piping and sprinklers throughout the building. The AST at Building 1256 contains 300 gallons of AFFF. Currently, the brand and manufacture date of the AFFF are unknown.

The building is outfitted with 12 to 18 inch wide floor drains and drainage grates that extend the length of the floor (A.T. Kearney, Inc., 1986). All interior drain lines divert to an OWS and eventually to sanitary sewer lines. Prior to 2011, sanitary sewer lines led to the MCAS Beaufort WWTP and treated water was discharged to an unnamed tributary of Albergoatie Creek. In 2011 a private off-base treatment facility began treating the water from the sewage system. In general the

waste that enters the drainage system includes rinse waters potentially containing accidental releases of products associated with routine aircraft maintenance including fuel, lube oils and hydraulic fluids. Additionally, it is possible that AFFF could enter the drain system during a release, or remnant AFFF from a release may enter the drain system via rinse water during routine activities.

According to site personnel common practice during a release of material (fuel, oil, or AFFF) is to push the material past the floor drains, and attempts are made to contain the material with berms. Efforts are made to close drains as soon as possible after the release is discovered. NREAO cleans up the release and waste is disposed of properly.

There are no spill reports that reference Building 1256 as the site of an AFFF release. However, the Fire Department Chief stated that, to his knowledge, a release of AFFF has occurred at every hangar on the flight line at some time in the past (Appendix G). The spill records obtained from site personnel only extend back to December 2006. Therefore, it is possible that a release at Building 1256 occurred but a spill record was not available at the time of preparation of this PA.

The closest surface water body is a freshwater pond (storm water pond) located approximately 425 feet to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall, and the floor drains divert water to the sanitary sewer system which, prior to 2011, discharged to the marsh; therefore, potential migration to surface water receptors is likely.

Building 1256 is an area of known storage of AFFF. Based on this information, Building 1256 is recommended to be considered for assessment of PFAS.

4.16 FORMER BUILDING 595 – FORMER AIRCRAFT RESCUE AND FIRE FIGHTING/FIRE DEPARTMENT STATION

Former Building 595 was located to the northwest of Hangar 729, as shown in Figure 4. The building was demolished in 2013 and the area is now an open field covered with grass. During operation, the building acted as the ARFF and Fire Department station. The station contained offices and living space as well as a large garage for firefighting and rescue vehicles.

According to site personnel, AFFF was not stored in the building (Appendix G). Containers of AFFF were stored in a warehouse and transported to the station for use. Empty AFFF containers were put in a bunker in building 595. Site personnel were unaware of where the empty containers were disposed of prior to demolition of the building.

ARFF and Fire Department trucks were supplied with AFFF at the station. Resupply occurred through a reservoir on top of the truck. Historically, AFFF containers were turned upside down and pierced by a fixed blade in the reservoir to open container. Site personnel indicated that occasionally AFFF splashed out of the container/reservoir during resupply. Resupply activities may have resulted in small repeated releases of AFFF to the surrounding area. Additional activities that took place at building 595 included washing the trucks on the concrete pad in front of the station.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.42 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall; therefore, potential migration to surface water receptors is likely.

Based on the information obtained during the PA, Building 595 is known to have housed firefighting and rescue vehicles carrying AFFF, and acted as an area to clean trucks and resupply AFFF to the firefighting vehicles. Based on this information, this area is recommended to be considered for PFAS assessment.

4.17 BUILDING 1313 – AIRCRAFT RESCUE AND FIREFIGHTING STATION

Building 1313 is located directly north of Hangar 729 on the flight line, as shown in Figure 4. The building acts as the current ARFF Station and contains office space as well as a garage for ARFF trucks. Currently, 10 trucks and 2 TAUs are housed at the station, and are parked inside of the barn or on the concrete pad outside. Each TAU contains 80 gallons of AFFF and each truck contains 130 gallons of AFFF. The brand and manufacture date of the AFFF contained within the trucks and TAUs are unknown.

Trucks are supplied with AFFF at the station or at the training area. Resupply occurs through a reservoir on top of the truck or TAU. To resupply the trucks, AFFF containers are turned upside down and pierced by a fixed blade in the reservoir to open the AFFF container. Site personnel indicated that occasionally AFFF splashed out of the container/reservoir during resupply. Resupply activities may have resulted in small repeated releases of AFFF to the surrounding area. Additional activities that take place at Building 1313 include washing the fire trucks on the concrete pad in front of the station.

According to AFFF storage records, small quantities of unused AFFF are stored in Building 1313 (Appendix A). Currently, one 5-gallon pail of National Foam manufactured prior to June 2016 is stored in the building. Containers of AFFF are primarily stored in a warehouse (Building 612) or a

bunker (Building 262) and are transported to the station when necessary. Site personnel were unaware of where the empty containers are disposed.

During a site visit, a mobile de-foaming unit was present on the concrete on the southwestern side of the building. During interviews with site personnel it was stated that the de-foaming trailer is a closed system that allows for AFFF to be removed from trucks and temporarily stored in a plastic tank during major repairs on trucks (Appendix G). The trailer has secondary containment consisting of drip pans, and during de-foaming diapers are placed around the trailer. An ARFF employee mentioned that to his knowledge AFFF has not been spilled during de-foaming activities. However, other site personnel indicated that AFFF is occasionally spilled during de-foaming activities (Appendix G). De-foaming activities may have resulted in small repeated releases of AFFF to the surrounding area.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.4 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall; therefore, potential migration to surface water receptors is likely.

Based on the information obtained during the PA, Building 1313 is known to house trucks carrying AFFF, and is used as an area to wash the trucks and resupply AFFF to the trucks. Additionally, de-foaming activities have taken place at this location. Based on this information, Building 1313 is recommended to be considered for PFAS assessment.

4.18 STORM WATER POND

The storm water pond is located to the south of Hangar 2146, as shown in Figure 4, and covers an approximate area of 7.5 acres. The storm water pond receives water from storm drains, including those located outside of the hangars. Additionally, the concrete pads associated with the process fuel vessels in the east and west ramp areas (SWMU 68 and SWMU 69) drain to the storm water pond via drains located next to the units.

The storm water pond receives water from locations that have known releases of AFFF, including the hangars and the east and west ramp areas. Runoff from these areas may have been impacted with remnant AFFF from a release. Additionally, site personnel indicated that AFFF has been observed in the storm water pond (Appendix G).

The storm water pond is classified as a freshwater pond. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was

identified. Natural drainages from the storm water pond flow approximately 0.2 miles south to the nearest estuarine and marine wetland; therefore, potential migration to surface water receptors is likely.

Based on the areas that drain to the storm water pond, and the confirmed presence of AFFF in the pond, it is likely that the pond has received AFFF-containing wastewater/storm water. Based on this information, the storm water pond is recommended to be considered for assessment of PFAS.

4.19 SWMU 74 – HAZARDOUS WASTE STORAGE TANK 979

Tank 979 (SWMU 74) is located adjacent to the corner of Kimes Avenue and Gordon Street as shown in Figure 4. Tank 979 is an AST with a holding capacity of 10,000 gallons. The tank originally received various liquid wastes from site activities including waste fuel, waste oil, and mixed paint waste (A.T. Kearny, Inc., 1986). Tank 979 is currently used as a storage tank for waste AFFF and water containing AFFF. The tank is situated on concrete supports in a concrete containment with bermed sides. Current waste management practices include transferring AFFF rinsate to the AST and when approximately 6,000 gallons of waste are collected the waste is transferred to a waste disposal tanker and disposed of as bulk waste. Per guidance, the waste is incinerated. Previously, waste was solidified for disposal.

Tank 979 is filled and emptied using vacuum trucks. The truck and tank are connected via hose and cam lock fittings. During filling and emptying activities, portable secondary containment is placed under the connections and the vacuum truck has spill supplies on board for use in the event of a spill. The Environmental Compliance Supervisor stated that no spills have been reported at Tank 979, and during the site walk there was no evidence of release. During the site walk a hose was observed laying on the concrete in front of the tank with no additional containment measures present. The transfer activities may result in repeated small releases of AFFF to the surrounding area.

The closest surface water body is an estuarine and marine wetland located approximately 0.24 miles to the southeast. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Natural drainages exist to the southeast of the site and flow southeast to the wetland; therefore, potential migration to surface water receptors is likely.

Tank 979 is an area of known AFFF rinsate storage, and the location of transfer of AFFF rinsate between vacuum trucks and the tank. Secondary containment is utilized during filling and emptying of the tank, however, small releases of AFFF may have occurred when the hose was disconnected

and returned to the concrete pad. While no releases of AFFF rinsate have been reported at this location, releases may have occurred during routine activities. Based on this information, Tank 979 is recommended for PFAS investigation.

4.20 SWMU 12 – FORMER EASTERN FIRE TRAINING PITS

SMWU 12 (Former Eastern Fire Training Pits) is located in the central portion of the base, as shown in Figure 5. The site is near the eastern end of the old east-west runway, approximately 2,800 feet east of the intersection of the current runways, and consists of two former firefighting training pits. The two firefighting training pits were reported to have been approximately 60 feet in diameter. The southern pit was dug directly into the ground and was used from the late-1950's to the mid-1960s (A.T. Kearney, Inc., 1986). The northern pit was constructed of earthen berms on top of the old runway and was used from the late 1960's to the mid-1970's.

Historically, flammable wastes, primarily JP-4, along with motor oil, jet fuel, and solvents were poured into a pit, ignited, and the fire was extinguished with water, chemical foam and/or AFFF. Training was conducted approximately four times a month. Additionally, severely corroded drums were found scattered around the area near SWMU 12. It is not known whether these drums were related to the firefighting training pits; however, due to their close proximity, they were included as part of SWMU 12.

Several investigations have been conducted at the site, including a RCRA Facility Investigation (RFI) (Tetra Tech, 2008), interim remedial action in the form of excavation of contaminated soils, and a CMS (Tetra Tech, 2015). Details regarding previous investigations/activities are reported in the *UFP SAP for CMS Addendum for SWMU 12* (Resolution Consultants, 2016).

The *CMS for SWMU 12 Former Eastern Fire Training Pits* was prepared by Tetra Tech and submitted to SCDHEC in February 2015 (Tetra Tech, 2015). The CMS did not include PFAS as constituents of concern. In April 2015 SCDHEC provided comments which included adding PFAS to the groundwater parameter list. In response to the SCDHEC comments, the *UFP SAP for CMS Addendum at SWMU 12, MCAS Beaufort* was prepared by Resolution Consultants in August 2016. The UFP SAP presented the planned field activities for the implementation of the selected corrective measures for groundwater at SWMU 12. Quarterly groundwater sampling was initiated in January 2017. During the four quarterly sampling events PFOA and PFOS detections were widespread in the shallow surficial aquifer at SWMU 12 (Resolution Consultants, 2017a, 2017b, 2018a and 2018b). PFOS and PFOA exceeded their respective screening criteria in 14 of the 16 monitoring wells sampled during the December 2017 sampling event (Resolution Consultants, 2018b).

Based on the historic training exercises completed at the fire training area and the results of recent investigations, AFFF containing PFAS was used and/or released in this area resulting in the PFOA and PFOS concentrations detected during the quarterly sampling at SWMU 12. The path forward for SWMU 12 is to continue efforts to delineate and monitor the PFAS plume.

4.21 SWMU 16 – STORM SEWER DRAINAGE OUTFALL

SWMU 16 is located approximately 700 feet to the east of Kavieng Street and 700 feet south of Kimes Avenue, as shown in Figure 6. Two major surface drainage channels, one running north-south and one running west-east, divert water to the storm sewer outfall (SWMU 16) which drains into the marsh. The drainages receive runoff from the aircraft hangars, ground support maintenance areas, and natural areas (Dames and Moore, 1986). Additionally, the north-south drainage collects runoff from an approximately 200-acre area north of 2nd street, i.e. north of the hangars.

Initially, the north-south drainage consisted of a 2,700 foot long natural drainage channel and the east-west drainage consisted of a 3,400 foot open concrete channel and a 1,600 foot natural channel at the eastern end. Following the addition of an oil/water skimmer in 1988, the outfall began discharging additional water from ditches adjacent to Kimes Avenue, and from the Day Tank Area. **In the late 1990's the storm water pond was constructed** at the intersection of the drainages. Water from the drainages collects in the storm water pond and is discharged to the marsh via natural channels. In 2008, the western half of the concrete channel was converted to a buried concrete pipe. In 2015, the remainder of the concrete channel was converted to a buried concrete pipe.

Runoff from the maintenance areas, hangars and natural areas is collected in the channels and transported to the outfall. From 1956 through 1971 liquid wastes were occasionally disposed of in these channels (Dames and Moore, 1986). Wastes disposed of during this time included various fuels, oils, solvents, and hydraulic fluids. It is estimated that 285,000 gallons of liquid wastes were disposed of through the channels. Contaminants associated with the storm sewer outfall are likely to migrate through surface water pathways. The outfall discharges to a tidal stream that drains to Albergotte Creek, where contamination has the potential to spread to the marsh due to tidal action (Dames and Moore, 1986).

No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. The storm sewer outfall discharges directly into an estuarine and marine wetland; therefore, potential migration to surface water receptors is likely.

The historic use of drainage channels to dispose of liquid waste and the potential for AFFF contaminated runoff from areas of known releases indicates that SWMU 16 may be a source of PFAS. Based on this information, SWMU 16 is recommended to be considered for PFAS assessment.

4.22 BUILDING 843 – MOTOR TRANSPORT MAINTENANCE SHOP

Building 843 is located on Geiger Boulevard, as shown in Figure 6, and operates as a motor transportation maintenance shop. The main building has six work bays and office space. Maintenance and repairs are performed on vehicles at this location, including fire response trucks equipped with AFFF.

A release of AFFF occurred on December 8, 2011 during repairs on a firefighting truck (Appendix B). Spill records indicate that the mechanic was told that the truck had been de-foamed prior to arriving at Building 843. However, the truck had not been de-foamed and when a pipe was removed from the truck approximately 100 gallons of AFFF were released. The spill was contained by mechanics on site. NREAO was contacted and the spill was cleaned up using a vacuum truck. Approximately 95% of the AFFF was contained to a paved surface. The remainder of the AFFF spread to the dirt adjacent to the paved area.

The closest surface water body is an estuarine and marine wetland located approximately 0.18 miles to the southwest. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air or groundwater was identified. AFFF released on the dirt may have migrated to shallow groundwater, which typically flows to the closest surface water body. Due to the sandy soils, shallow water table and close proximity to the surface water body, potential migration to surface water receptors is likely.

Building 843 is an area of known AFFF release. Based on this information, Building 843 is recommended for assessment of PFAS.

4.23 SWMU 67 – SEWAGE TREATMENT PLANT

SWMU 67 is located on Geiger Boulevard, approximately 600 feet south of the Moore Street intersection, and extends from the road to the marsh as shown in Figure 6. An industrial WWTP operated at this location from 1956 through 2011 when it was demolished (USMC, 2009; Resolution Consultants, 2014). The plant treated sanitary sewage generated at the base along with small quantities of waste and rinse waters associated with aircraft maintenance facilities and general runoff from portions of the base. OWSs on base are connected to the sanitary sewer, including

those associated with areas of known AFFF release, and water from the OWSs was treated at the WWTP during the years of operation.

The plant consisted of primary tanks, settling tanks, digester tanks, a sludge concentration building, **headwork's pretreat structure, sludge pump house, sludge concentrator, sludge drying beds,** standby generator plant, dumpster wash rack, warehouse, sewage treatment pump house, chlorine storage facility, and chlorine contact tank. Treated sanitary sewage was discharged into an unnamed tributary of Albergottie Creek southwest of the plant. The plant was demolished when plant operations were privatized and wastewater treatment was diverted to Port Royal Island Water Reclamation Facility in 2011 (Resolution Consultants, 2014).

No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. The former WWTP discharged directly into an estuarine and marine wetland until 2011; therefore, potential migration to surface water receptors is likely.

Based on information obtained during the PA, it is likely that the former sewage treatment plant received waste containing materials associated with PFAS contamination including aviation hydraulic fluid and AFFF rinsate. Based on this information, SWMU 67 is recommended to be considered for PFAS assessment.

4.24 SWMU 6 & 14 – INERT LANDFILL SEEPAGE TRENCHES/INERT LANDFILL

SWMU 6 & 14 includes a former 21-acre landfill located to the south of the Corporal Way and Moore Street intersection, as shown in Figure 6. Disposal activities occurred at SWMU 6 from 1966 through 1985 and at SWMU 14 from 1966 through 1977. The majority of waste disposal at this landfill occurred from 1966 to 1977. Industrial waste disposal occurred from 1966 through 1979 and disposal of WWTP waste occurred from 1978 through 1985 (Dames and Moore, 1986; USACE, 2003).

SWMU 6 includes 10 to 12 former seepage trenches located on the northeastern and southeastern corners of the former landfill. The trenches were approximately 15 feet wide, 50 feet long and 4 feet deep, covering a total area of approximately 0.9 acres (A.T. Kearney, Inc., 1986). During the operational period, approximately 418,000 gallons of liquid wastes were disposed of in the trenches (Dames and Moore, 1986). Liquid wastes were disposed of in the trenches and, when seepage was no longer effective, the trench was backfilled with soil and a new trench was excavated. Liquid wastes included contaminated jet fuel, waste motor and lube oil, hydraulic fluids, anti-freeze,

various solvents, and paint thinners and strippers. Waste from the WWTP was also disposed of in the trenches.

SWMU 14 includes the Inert Landfill which covered approximately 20 acres and received solid waste and trash during operation from 1966 to 1977 (Dames and Moore, 1986). Solid waste and trash included domestic trash and garbage, empty pesticide containers, cleaning rags, oil cans and filters, paint spray booth filters, paint brushes, rollers and rags, mercury amalgam, and asbestos brakes. Sludge from the WWTP was disposed of at the Inert Landfill from 1966 through 1981. Surface solid waste debris at SWMU 14 was removed from the site in 2014 (Sovereign Consulting Inc., 2014).

The closest surface water body is a freshwater forested/shrub wetland located within the boundary of SWMU 6 & 14, and an estuarine and marine wetland located approximately 390 feet to the east. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air or groundwater was identified. Potential PFAS contamination may have leached to shallow groundwater, which typically flows to the closest surface water body. Due to the landfill being unlined and the sandy soils, shallow water table and close proximity to the surface water body, potential migration to surface water receptors is likely.

It is possible that sludge and waste from the sewage treatment plant disposed of at SWMU 6 & 14 contained PFAS. Additionally, other materials commonly associated with PFAS contamination were disposed of at the landfill and in the trenches. Based on this information, SWMU 6 & 14 is recommended to be considered for PFAS assessment.

4.25 BUILDING 1171 – MWSD-31 FUELS

Building 1171 is located off of Geiger Boulevard, approximately 1,000 feet before the eastern end, as shown in Figure 6. The building acts as the MWSD-31 Fuels Station and contains office space as well as a garage for vehicles. Currently, three trucks outfitted with TAUs are stationed at the building. Trucks are parked in the concrete parking lot behind the building. One of the TAUs contains 80 gallons of AFFF, and two of the TAUs contain 100 gallons of AFFF. The brand and manufacture date of the AFFF contained within the TAUs are unknown.

According to AFFF storage records, containers of unused AFFF are not stored in Building 1171 (Appendix A). Containers of AFFF are stored in a warehouse and are transported to the station when necessary. Site personnel were unaware of where the empty containers were disposed of.

TAUs are supplied with AFFF at the building, or at the training area, through a reservoir on top of the unit. Site personnel indicated that occasionally AFFF splashes out of the container/reservoir during resupply.

The closest surface water body is an estuarine and marine wetland located approximately 670 feet to the east. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from the site may flow towards the surface water, or infiltrate shallow groundwater onsite, which typically flows to the closest surface water body. Due to the sandy soils, shallow water table and close proximity to the surface water body, potential migration to surface water receptors is likely.

Based on the information obtained during the PA, Building 1171 houses trucks with AFFF installed in TAUs, is an area where trucks carrying AFFF are washed, and is the location of AFFF resupply for TAUs. Based on this information, Building 1171 is recommended to be considered for PFAS assessment.

4.26 SWMU 2 – LAFRENE ROAD LANDFILL

SWMU 2 consists of the former Lafrene Road Landfill that existed on an unnamed island 400 feet east of Lafrene Road, as shown in Figure 6. The landfill was used for waste disposal from 1958 through 1965, after disposal activities at the Borrow Pit Landfill (SWMU 3) were discontinued (A. T. Kearney, Inc., 1986). During operation, the landfill consisted of two areas: a section on the northwest corner of the island covering approximately 0.2 acres, and a section on the eastern edge of the island covering approximately 1.8 acres (Dames and Moore, 1986).

Operations at the landfill included filling a borrow pit, located on the eastern edge of the island, with trash and other wastes, including liquids in 55-gallon drums (USACE, 2003). The pit was approximately 100 square feet and the depth to bottom is unknown, however, it is documented that the bottom of the pit did not reach the water table. Drums were crushed by a bulldozer near the edge of the pit and liquid waste drained into the pit. The drums and the soil beneath the crushed drums were pushed into the pit. When the pit was full, trenches were excavated adjacent to the pit. Trenches were also excavated in the smaller area on the northwest corner of the island. The trenches were approximately 50 feet long, 8 feet wide and 4 feet deep. Waste disposal in the trenches was conducted similarly to the methods used at the pit. Construction debris and waste were pushed over the eastern edge of the island to make space for additional trenches.

Wastes disposed during operation included domestic trash and garbage, jet fuel, motor and lube oils, hydraulic fluid, antifreeze, various solvents, empty pesticide containers, cleaning rags, oil cans and filters, paint spray both filters, paint thinners and strippers, miscellaneous painting tools, mercury amalgam, asbestos brakes, and WWTP sludge (A. T. Kearney, Inc., 1986).

The closest surface water body is an estuarine and marine wetland located directly adjacent SWMU 2. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air or groundwater was identified. Potential PFAS contamination may have leached to shallow groundwater, which typically flows to the closest surface water body. Due to the landfill being unlined and the sandy soils, shallow water table and close proximity to the surface water body, potential migration to surface water receptors is likely.

It is possible that sludge from the sewage treatment plant disposed of at SWMU 2 contained PFAS. Additionally, other materials commonly associated with PFAS contamination were disposed of in the pit and trenches. Based on this information, SWMU 2 is recommended to be considered for PFAS assessment.

4.27 BUILDING 2085 – FIRE DEPARTMENT STATION

Building 2085 is located at the intersection of Fire Lane Road and North Drayton Street, as shown in Figure 7. The building acts as the Fire Department Station and contains office space as well as a garage for firefighting vehicles. Currently, the station houses 3 firefighting trucks that are parked inside of the barn or on the concrete pad outside. Each Fire Department truck contains 50 gallons of AFFF. The manufacture date of the AFFF contained within the trucks is unknown; the brand of the AFFF is 3M (Appendix A). Site personnel indicated that the hoses on the fire trucks occasionally leak and that the leaks are primarily water but likely contain residual AFFF from the system and hose.

According to AFFF storage records, containers of unused AFFF are not stored in Building 2085 (Appendix A). Containers of AFFF are stored in a warehouse and are transported to the station when necessary. Site personnel were unaware of where the empty containers were disposed of.

Trucks are supplied with AFFF at the station, through a reservoir on top of the truck. To resupply the trucks, AFFF containers are turned upside down and pierced by a fixed blade in the reservoir to open the container. Additional activities that take place at Building 2085 include washing the fire trucks on the wash pad area to the north of the main building.

The closest surface water body is a freshwater pond (storm water pond) located approximately 0.22 miles to the east. No drinking water sources are located within 1-mile downgradient of the site. No potential for exposure via soil, air or groundwater was identified. Surface runoff from this area is diverted to the storm sewer system which discharges to the marsh at the storm sewer outfall; therefore, potential migration to surface water receptors is likely.

Based on the information obtained during the PA, Building 2085 is known to have been used to house and wash trucks carrying AFFF and as an area to resupply AFFF to the trucks. Based on this information, Building 2085 is recommended to be considered for PFAS assessment.

4.28 2019 FIRE RESPONSE AREA

According to site personnel, MCAS Beaufort ARFF responded to a brush fire that occurred at 3481 **Trask Parkway (N 32° 27' 8.07", W 80° 43' 53.52")**, as shown in Figure 7. On February 22, 2019, MCAS ARFF Marines were travelling back to base from Parris Island and came across a Beaufort County deputy fighting a brush fire using a fire extinguisher. The Marines used a TAU mounted on a Humvee to extinguish the fire. Personnel estimate that 20 gallons of old MILSPEC AFFF/PKP were used in the fire response. The brand and manufacture date of the AFFF used during the response are unknown. The brush fire occurred in a grass and dirt covered area. No containment or cleanup measures were put into place during or following the use of AFFF. A fire response narrative prepared by Burton Fire District Station 81 is included as Appendix E.

The closest surface water body is freshwater forested/shrub wetland located approximately 100 feet to the south and an estuarine and marine wetland located approximately 300 feet to the south. No drinking water sources are located within 1-mile downgradient of the crash site. No potential for exposure via soil, air or groundwater was identified. AFFF may have leached to shallow groundwater, which typically flows to the closest surface water body. Due to the sandy soils, shallow water table and close proximity to the surface water body, potential migration to surface water receptors is likely.

The 2019 Fire Response Area is an area of known release of AFFF. Based on this information, the 2019 Fire Response Area is recommended to be considered for assessment of PFAS.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Navy has cumulatively identified 32 sites within MCAS Beaufort that have been associated with the historic use, storage, disposal, and/or release of materials containing PFAS. A comprehensive list of identified sites/building areas that includes details on the potential source of PFAS contamination, years of operation, and the recommended path forward is provided in Tables 1 and 2. Figures 1 through 7 provide a graphical summary of these areas.

Site-specific CSMs were developed using site drawings, historic investigation reports, and other lines of evidence to evaluate the likelihood of PFAS impacts. Based on the information available, the Navy has provided recommendations for further assessment or NFA for each evaluated area. NFA was selected when documented evidence did not exist or was not detailed enough to confirm the presence and or release of AFFF containing PFAS or other PFAS-containing materials. Site-specific CSMs for sites recommended for NFA will be presented in a forthcoming technical memorandum. The identified areas and recommendations provided on Tables 1 and 2 are based on the available site histories and information, discussions with MCAS Beaufort staff, and an understanding of common practices associated with the identified uses of PFAS.

5.1 AREAS RECOMMENDED FOR NO FURTHER ACTION

Results of this PA identified 24 specific buildings, structures, or sites for NFA. Many other sites were not linked to firefighting training activities, fire suppression systems, electroplating, landfills, or other activities where PFAS could have been stored, handled, or released. Details, including years of operation and the NFA rationale are provided in Table 2. Site-specific CSMs for NFA areas will be provided in a forthcoming technical memorandum.

5.2 EXISTING SAMPLING PROGRAMS

PFAS related investigations are currently underway at SWMU 12. The details for this sampling effort are provided in the *UFP SAP for CMS Addendum for SWMU 12* (Resolution Consultants, 2016).

5.3 AREAS RECOMMENDED FOR FURTHER ASSESSMENT

Results of this PA recommended 31 specific buildings, structures, or areas be considered for PFAS assessment, in addition to the one area currently being assessed for PFAS (SWMU 12). AFFF containing PFAS was confirmed to have been stored in several buildings, utilized in areas supporting firefighting training exercises, or released from fire suppression systems. Many of the remaining sites pertain to alleged releases due to spills, crashes, or waste disposal. Regardless of

the mechanism, the identified sites represent areas where PFAS could have been directly or indirectly released to the environment and represent a potential source to surrounding media. In some instances, no written records or documented evidence linked these areas with PFAS use, storage, disposal, and/or release, but a select number of these sites are also proposed for further investigation as a conservative measure.

5.4 NEXT STEPS

For the areas recommended for further assessment, it is recommended that the Navy Environmental Restoration Program (NERP) process be used to guide the path forward. Per the NERP guidance (US Navy, 2006), given the general absence of records indicating specific uses of PFAS, the scope of the investigation could be limited. A number of areas identified in this PA are within existing RCRA sites or areas of investigation where previous groundwater sampling has been performed. The sequencing of the investigation should also include an iterative approach, consisting of a cursory level of investigation at each area, assessing the results, and then determining the next level of investigation (if warranted) based on the impacts.

Areas recommended for PFAS assessment will be evaluated in accordance with current Department of Defense and Navy policy and guidance in consultation with SCDHEC.

REFERENCES

- Advent Environmental, Inc., 2005. Hangar 414 Tier II Assessment, Marine Corps Air Station, Beaufort, South Carolina. August 2005.
- Arcadis/Malcolm Pirnie, 2013. Range Environmental Vulnerability Assessment 5-Year Review, MCAS Beaufort and the Townsend Bombing Range. June 2013.
- A.T. Kearney, Inc., 1986. RCRA Facility Assessment Report, Marine Corps Air Station, Highway 21, Beaufort, South Carolina. October 1986.
- BJWSA, 2017. Water Quality Report for Water Delivered in 2017. 2017.
- Dames and Moore, 1986. Initial Assessment Study of Marine Corps Air Station, Beaufort South Carolina and Naval Hospital, Beaufort South Carolina. August 1986.
- Danish Ministry of the Environment, 2011. Substitution of PFOS for Use in Nondecorative Hard Chrome Plating. 2011.
- DoD, 2009. Department of Defense Instruction, Emerging Contaminants, #4715.18. June, 2009.
- ITRC, 2017. History and Use of Per- and Polyfluoroalkyl Substances. November, 2017.
- Navy, 2006. Department of the Navy Environmental Restoration Program Manual. August 2006.
- Resolution Consultants, 2014. Final Confirmatory Sampling Investigation Report, SWMU 67 Confirmatory Sampling, Marine Corps Air Station, Beaufort, South Carolina. January 2014.
- Resolution Consultants, 2016. Uniform Federal Policy Sampling and Analysis Plan for Corrective Measures Study Addendum, Marine Corps Air Station, Beaufort, South Carolina, SWMU 12. August 2016.
- Resolution Consultants, 2017a. Draft Final 1st Quarterly Groundwater Monitoring Report and January 2017 Groundwater Assessment Activities, SWMU 12, Marine Corps Air Station, Beaufort, South Carolina. August 2017.
- Resolution Consultants, 2017b. Draft Final 2nd Quarterly Groundwater Monitoring Report, SWMU 12, Marine Corps Air Station, Beaufort, South Carolina. September 2017.

Resolution Consultants, 2018a. Draft 3rd Quarterly Groundwater Monitoring Report and September 2017 Groundwater Assessment Activities, SWMU 12, Marine Corps Air Station, Beaufort, South Carolina. January 2018.

Resolution Consultants, 2018b. Draft 4th Quarterly Groundwater Monitoring Report, SWMU 12, Marine Corps Air Station, Beaufort, South Carolina. April 2018.

SCDHEC, 2016. Approval – Debris Removal Report, AOC P, No Further Action Request. May 2016.

SCDNR, 2015. Rare, Threatened, and Endangered Species of South Carolina by County, Beaufort County (<http://www.dnr.sc.gov/species/beaufort.html>). 2015.

Sovereign Consulting, Inc., 2014. Project Closeout Report, Debris Removal at SWMU 14, Marine Corps Air Station Beaufort, Beaufort, South Carolina. October 2014.

Tetra Tech, 2008. RCRA Facility Investigation Report for SWMU 12, Former Eastern Fire Training Pits, Marine Corps Air Station, Beaufort, South Carolina. September 2008.

Tetra Tech, 2014. RCRA Facility Investigation Report for AOC C, Mop Washing Area, Marine Corps Air Station, Beaufort, South Carolina. February 2014.

Tetra Tech, 2015. Corrective Measures Study SWMU 12 Former Eastern Fire Training Pits, Marine Corps Air Station, Beaufort, South Carolina. February 2015.

Tetra Tech, 2016. Statement of Basis for AOC P, Marine Corps Air Station, Beaufort, South Carolina. May 2016.

USACE, 1997. Confirmatory Sampling Event for Crash Fire Rescue Training Site (SWMU 18), Marine Corps Air Station, Beaufort, South Carolina. July 1997.

USACE, 1999. Addendum to Confirmatory Sampling Event for SWMU 17, 57 and 67, Marine Corps Air Station, Beaufort, South Carolina. November 1999.

USACE, 2003. RCRA Facility Investigation Report for SWMU 6 and SWMU 14, Seepage Trenches and Inert Landfill, Marine Corps Air Station, Beaufort, South Carolina. June 2003.

USFWS, 2018. South Carolina List of At-Risk, Candidate, Endangered, and Threatened Species, Beaufort County. December 2018.

USMC, 2009. SWMU Assessment Report for new SWMU 87 – **Former 1940's-Era** Wastewater Treatment Plant, MCAS, Beaufort, South Carolina. December 2009.

USEPA 2014. "Provisional Peer-Reviewed Toxicity Values for Perfluorobutane Sulfonate (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3)." Superfund Health Risk Technical Support Center, National Center for Environmental Assessment, Office of Research and Development, July 2014.

Tables

Table 1
Inventory of Identified Areas
Sites Recommended for PFAS Investigation
MCAS Beaufort, Beaufort, South Carolina

Building/Area Name	Location	Years of Operation	Potential PFAS Release Mechanism	Current Status	Recommended Path Forward
Fire Training Area Site	South of Runway 14 and to the north of Runway 05	Late-1960's to present	Firefighting training application of AFFF.	In use as firefighting and Crash Fire Response training area	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed firefighting training activities that have included the use of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
SWMU-13 - Western Fire Training Pits	South of the current fire training area	Late-1960's and late-1970's	Firefighting training application of AFFF.	Inactive	SWMU 13 is recommended for PFAS investigation as part of the Fire Training Area Site.
SWMU 18 - Current Fire Training Pits	Western end of the former east-west runway	1970's to present	Firefighting training application of AFFF.	Active	SWMU 18 is recommended for PFAS investigation as part of the Fire Training Area Site.
AOC O - Waste Disposal Area (South of Current Fire Training Pit)	South of the current fire training area	Unknown	Waste Disposal	Inactive	AOC O is recommended for PFAS investigation as part of the Fire Training Area Site.
AOC P - Suspect Disposal Area (West of the ARFF Training Site)	North and west of the current fire training area	Unknown	Waste Disposal	Inactive	AOC P is recommended for PFAS investigation as part of the Fire Training Area Site.
Hangar 1331	At the intersection of the former east-west and abandoned north-south runways	mid-1990's to present	Storage of AFFF in UST. Release of 2 gallons of AFFF in July 25, 2011.	Active with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
1991 Crash Site	At the northern end of Runway 14	1991 (AFFF used)	Application of AFFF during crash response.	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed firefighting application of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Compass Rose Crash Site	Compass Rose on Runway 23	2003 (AFFF used)	Application of AFFF during crash response.	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed firefighting application of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
West Ramp Area	Adjacent to Runway 5	2004 (AFFF used)	Application of AFFF during fuel spill response.	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed application of AFFF during spill response after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
East Ramp Area	Adjacent to Runway 14	1996 (AFFF used)	Application of AFFF during fuel spill response.	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed application of AFFF during spill response after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 414	On Norris Avenue and situated along the flight line	1940's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Release of 6,000 gallons of AFFF occurred on November 11, 2004. Release of 60 gallons of AFFF occurred on February 12, 2016. Release of 275 gallons of AFFF occurred on October 28, 2016.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 1084	Directly south of Taxiway A and situated along the flight line	late-1980's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Release of 320 gallons of AFFF occurred on March 3, 2018.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 418	On Capers Street and situated along the flight line as shown	late-1950's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Release of 7,100 gallons of AFFF occurred in December 2006.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.

Table 1
Inventory of Identified Areas
Sites Recommended for PFAS Investigation
MCAS Beaufort, Beaufort, South Carolina

Building/Area Name	Location	Years of Operation	Potential PFAS Release Mechanism	Current Status	Recommended Path Forward
Hangar 2146	On the northwestern end of Simpson Street and is situated along the flight line	early-2010's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Release of 1,200 gallons of AFFF occurred in 2015.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 416	On the northern end of Gordon Street and was situated along the flight line	1940's to 2015 (demolished)	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Possible undocumented release of AFFF.	Demolished 2016, replaced by Hangar 3060 in 2018.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 728	At the intersection of 2 nd Avenue and Drayton Street and situated along the flight line	1940's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Release of 1,100 gallons of AFFF occurred on July 12, 2005.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 729	On Parks Avenue and situated along the flight line as shown	1940's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Possible undocumented release of AFFF.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 594	On Calhoun Street and situated along the flight line	1940's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Possible undocumented release of AFFF.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Hangar 1256	West of Hangar 2146 and situated along the flight line	early-2000's to present	Storage of AFFF in UST. Potential storage of other PFAS-containing materials. Possible undocumented release of AFFF.	Active hangar with AFFF stored in AST associated with fixed fire suppression system.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Building 595 – Former Aircraft Rescue and Fire Fighting/Fire Department Station	Northwest of Hangar 729	Demolished 2013	Confirmed storage of fire vehicles with installed AFFF, confirmed AFFF resupply of trucks, and washing of trucks containing AFFF.	Demolished in 2013.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Building 1313 – Aircraft Rescue and Firefighting Station	North of Hangar 729 on the flight line	Unknown-present	Confirmed storage of unused AFFF, confirmed storage of fire vehicles with installed AFFF, confirmed AFFF resupply of trucks, and washing of trucks containing AFFF.	Active storage of trucks with installed AFFF.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Storm Water Pond	South of Hangar 2146	Unknown-present	Receives runoff from areas of known AFFF releases. Visual evidence of AFFF in pond.	Active	Proceed to SI phase of investigation for groundwater (presence or absence) based on receipt of runoff from hangars and areas of known AFFF release after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
SWMU 74 – Hazardous Waste Storage Tank 979	Adjacent to the corner of Kimes Avenue and Gordon Street	Unknown-present	Bulk storage of waste AFFF and AFFF rinsate. Potential undocumented release during filling or emptying.	Active	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.

Table 1
Inventory of Identified Areas
Sites Recommended for PFAS Investigation
MCAS Beaufort, Beaufort, South Carolina

Building/Area Name	Location	Years of Operation	Potential PFAS Release Mechanism	Current Status	Recommended Path Forward
SWMU 12 – Former Eastern Fire Training Pits	Near the eastern end of the old east-west runway, approximately 2,800 feet east of the intersection of the current runways	1956-1965 (dirt) and 1966-1978 (concrete)	Firefighting training application of AFFF.	Inactive	Proceed to SI phase of investigation for groundwater based on confirmed firefighting training activities that have included the use of AFFF after 1960. Groundwater collected from SWMU 12 was analyzed for PFAS quarterly in 2017 as part of the Corrective Measures Study for SWMU 12. Sampling and reporting should continue as planned; results should also be presented in the Basewide SI Report.
SWMU 16 – Storm Sewer Drainage Outfall	700 ft to the east of Kavieng Street and 700 ft south of Kines avenue	1918 to present	Receives runoff from areas of known AFFF releases.	Active	Proceed to SI phase of investigation for groundwater (presence or absence) based on receipt of runoff from hangars and areas of known AFFF release after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Building 843	On Geiger Boulevard	1940's to present	Release of 100 gallons of AFFF on December 8, 2011.	Active vehicle maintenance	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
SWMU 67 – Sewage Treatment Plant	On Geiger Boulevard, approximately 600 ft south of the Moore Street intersection	1956 through 2011	Potential receipt of AFFF-containing wastewater.	Demolished in 2011.	Proceed to SI phase of investigation for groundwater (presence or absence) based on receipt of waste water from hangars and areas of known AFFF release after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
SWMU 6 & 14 – Inert Landfill Seepage Trenches/Inert Landfill	South of the Moore Street and Corporal Way Intersection	1966-1985 (SWMU 6) and 1966-1977 (SWMU 14)	Landfill	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on receipt of waste water from waste water treatment plant after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Building 1171	Off of Geiger Boulevard, approximately 1,000 feet before the eastern end.	Unknown-present	Confirmed storage of Twin Agent Units with installed AFFF, and confirmed AFFF resupply of TAUs.	Active storage of trucks with installed AFFF	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
SWMU 2 – Lafrene Road Landfill	On an unnamed island at the eastern end of Hazmat Road, approximately 400 ft east of Lafrene Road	1958-1965 (SWMU 2)	Waste Disposal	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed use of landfill after 1960, and potential disposal of PFAS-containing materials. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
Building 2085 - Fire Department Station	At the intersection of Fire Lane Road and North Drayton Street	Unknown-present	Confirmed storage of fire vehicles with installed AFFF, confirmed AFFF resupply of trucks, and washing of trucks containing AFFF.	Active storage of trucks with installed AFFF.	Proceed to SI phase of investigation for groundwater (presence or absence) based on storage and potential release of AFFF after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.
2019 Fire Response Area	3481 Trask Parkway	February 22, 2019	Confirmed use of AFFF during fire response.	Inactive	Proceed to SI phase of investigation for groundwater (presence or absence) based on confirmed application of AFFF during fire response after 1960. This area is not associated with current PFAS investigations; develop an appropriate sampling plan for PFAS as part of a Basewide SI program; present the PFAS results in a Basewide SI Report.

Notes:

AFFF - Aqueous Film Forming Foam
AOC - Area of Concern
ARFF - Aircraft Rescue and Fire Fighting
AST - Aboveground Storage Tank
PFAS - Per- And Polyfluoroalkyl Substances
SI - Site Investigation
SWMU - Solid Waste Management Unit
UST - Underground Storage Tank

Table 2
Sites Reccomended for NFA
PFAS Preliminary Assessment
MCAS Beaufort, Beaufort, South Carolina

Building/Area Name	Location	Years of Operation	Potential PFAS Release Mechanism	Current Status	Recommended Path Forward
SWMU 75 - Hazardous Waste Container Storage Facility	On NREAO Loop	Unknown-present	Potential storage of waste PFAS-containing materials. Storage of drums containing AFFF contaminated debris and AFFF rinsate	Active	NFA is warranted for SWMU 75 because there is no documented release or evidence of release.
EOD Range	West of northern end of Runway 23	Unknown-present	Fire suppression	Active	NFA is warranted for the EOD Range because firefighting activities only involve the use of water. No AFFF is used in fire response at this site.
SWMU 89-Surface Debris Area	Near intersection of Funa Futi Road E and RC West Road N	Unknown	Waste Disposal	Inactive	NFA is warranted for SWMU 89 because there is no evidence to suggest that AFFF or AFFF impacted debris were disposed of in this area.
SWMU 17-Funa Futi Disposal Area	Adjacent to Cala Way	1960's and 1970's	Waste Disposal	Inactive	NFA is warranted for SWMU 17 because there is no evidence to suggest that AFFF or AFFF impacted debris were disposed of in this area.
SWMU 80-Oil Water Separator (Wash Rack 953)	Adjacent to Hangar 738	Unknown-present	Runoff potentially containing PFAS-containing material.	Active	NFA is suggested by Navy guidance for washing areas.
SWMU 81-Oil Water Separator (Wash Rack 959)	Adjacent to Hangar 594	Unknown-present	Runoff potentially containing PFAS-containing material.	Active	NFA is suggested by Navy guidance for washing areas.
Building 1270-Joint Hazmin Center	At the intersection of 2nd Avenue and C-Street	Unknown-present	Storage of unused AFFF.	Active	NFA is warranted for Building 1270 because there is no documented release or evidence of release.
Building 262-ARFF Bunker	On Tacan Loop, off of Bunker Avenue	Unknown-present	Storage of unused AFFF.	Active	NFA is warranted for Building 262 because there is no documented release or evidence of release.
Building 612-ARFF Warehouse	On Fire Lane Road	Unknown-present	Storage of unused AFFF.	Active	NFA is warranted for Building 612 because there is no documented release or evidence of release.
Building 2145-Pilot Training Building	At the western end of Lightning Drive	Unknown-present	AFFF stored in AST associated with fixed fire suppression system	Active	NFA is warranted for Building 2145 because there is no documented release or evidence of release.
SWMU 72-Base Photo Lab	At the intersection of Geiger Boulevard and Elrod Street	1955-present	Use/storage of photograph developing solution.	Active	NFA is warranted for SWMU 72 because no documentation could confirm PFAS were an active component in the developing solution, and any potential release would have been limited.
Auto Hobby Shop	At the intersection of Delalio Avenue and South Kavieng Street	Unknown-present	Potential storage or use of PFAS-containing materials.	Active	NFA is suggested by Navy guidance for areas that do not have AFFF or significant releases of other PFAS-containing products..
Building 617-ATSI Warehouse	On Engineer Avenue	Unknown-present	Storage of unused AFFF.	Active	NFA is warranted for Building 617 because there is no documented release or evidence of release.
SWMU 5-Pesticide Residue Pit Area	Adjacent to building 617	1956-1979	Pesticide disposal.	Inactive	NFA is warranted for SWMU 5 because records indicate the pesticides disposed of did not contain PFAS.

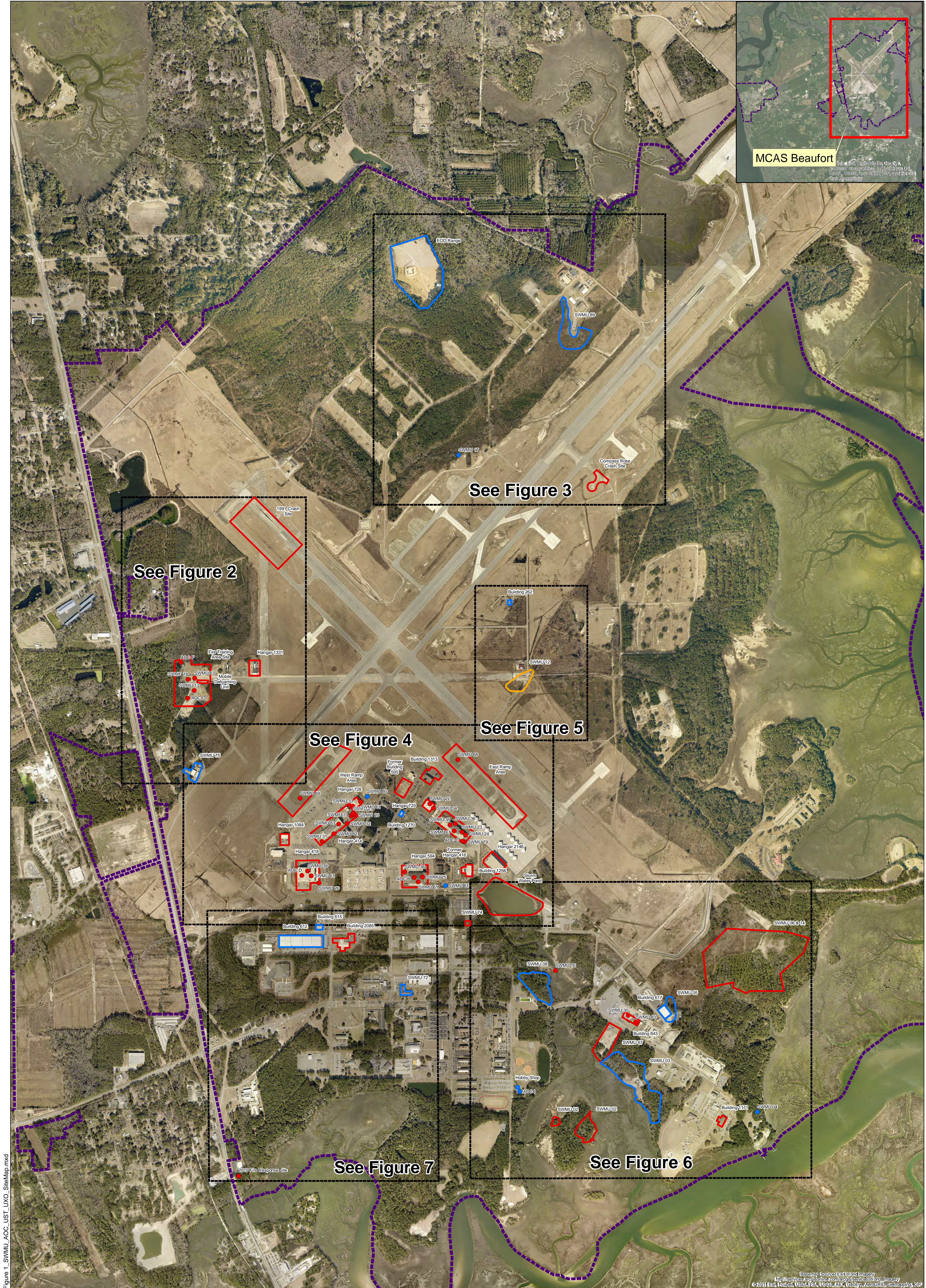
Table 2
Sites Reccomended for NFA
PFAS Preliminary Assessment
MCAS Beaufort, Beaufort, South Carolina

Building/Area Name	Location	Years of Operation	Potential PFAS Release Mechanism	Current Status	Recommended Path Forward
SWMU 8-Kavieng Street Landfill	Adjacent to building 610	1955-1957	Waste Disposal	Inactive	NFA is warranted for SWMU 8 because no confirmed disposal after 1960 occurred.
SWMU 4-Southeast Disposal Area	At the southeastern end of Geiger Boulevard	1950's or 1960's	Waste Disposal	Inactive	NFA is warranted for SWMU 4 because records indicate only inert debris (construction debris, drums, trash) were disposed of in this area.
SWMU 3-Borrow Pit Landfill	Adjacent to building 1152	1957-1958	Waste Disposal	Inactive	NFA is warranted for SWMU 3 because no confirmed disposal after 1960 occurred.
SWMU 1 - Fenced Hazard Area	Northeast corner of the unnamed island off of Lafrene Road	mid-1960's	Waste Disposal	Inactive	NFA is warranted for SWMU 1 because there is no evidence to suggest that PFAS were an active component in the materials disposed of at this location.
SWMU 84 - Pistol Range Landfill	East of the Pistol Range located on Pistol Range Road	1978-1980	Waste Disposal	Inactive	NFA is warranted for SWMU 84 because records indicate only inert debris (wood pieces, scrap metal, trash) were disposed of in this area.
SWMU 9 - Former Lube Oil Pit	To the south of Building 1150	Unknown-1974 (authorized), and 1974-1984 (unauthorized)	Concrete pit used for changing vehicle motor oil and minor repair work.	Inactive	NFA is warranted for SWMU 9 because no documentation could confirm PFAS were an active component in the materials used at this location.
SWMU 76 - Former Incinerator Disposal Area	Northeast of Tank Farm B	Unknown-mid 1950's	Underground concrete tank and surface debris.	Inactive	NFA is warranted for SWMU 76 because no confirmed disposal after 1960 occurred and no documentation could confirm PFAS were an active component in the materials disposed of in this area.
SWMU 77- Acid Neutralization Pit	Northwest of Drayton Street and 2nd Street intersection	Unknown	Underground concrete vault used as an acid neutralization pit.	Inactive	NFA is warranted for SWMU 77 because there is no evidence to suggest that PFAS were an active component in the materials disposed of at this location.
SWMU 85 - Automotive Debris Pile	Northwest of the end of Runway 14	Unknown	Waste Disposal	Inactive	NFA is warranted for SWMU 85 because there is no evidence to suggest that AFFF or AFFF impacted debris were disposed of in this area.
SWMU 87 - 1940's Era Wastewater Treatment Plant	Adjacent to the northeastern margin of the storm water pond	1942-1946	Wastewater Treatment Plant	Inactive	NFA is warranted for SWMU 87 because the treatment plant was decommissioned prior to 1960.

Notes:
AFFF - Aqueous Film Forming Foam
AOC - Area of Concern
ARFF - Aircraft Rescue and Fire Fighting
ATSI - AHTNA Technical Services, Inc.
EOD - Explosive Ordnance Disposal
NFA - No Further Action

PFAS - Per- And Polyfluoroalkyl Substances
SWMU - Solid Waste Management Unit

Figures

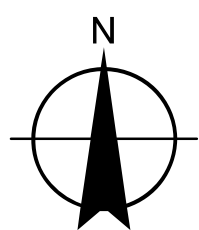


L:\work\GIS\MCAS Beaufort\maps\PA Report\Figure 1 SWMU AOC UST UXO SiteMap.mxd

Legend

- Potential PFAS Investigation Area
- No Further Action at this Time
- Potential PFAS Investigation
- Current PFAS Investigation

NOTES:
-All locations are approximate and represent the center of the named area.
-RCRA Permit SC1 750 216 169 Dated 1/13/2015.

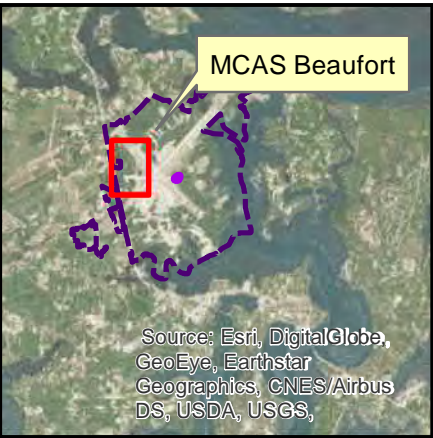
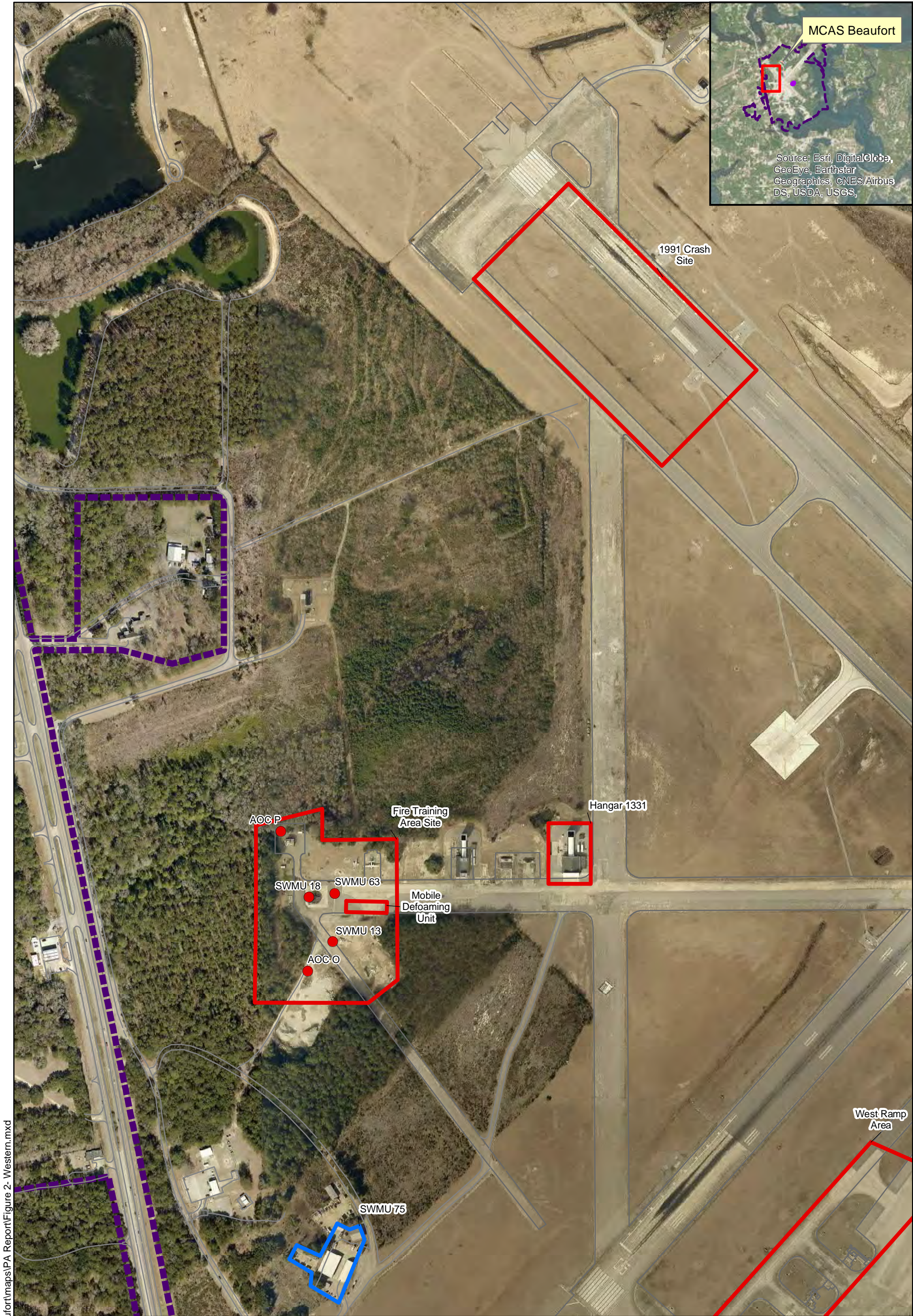


0 775 1,550
Feet

Figure 1
Sitewide Areas of Concern and Operable Units
MCAS Beaufort
Beaufort, South Carolina

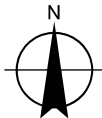


REQUESTED BY: SED
DRAWN BY: RDA
DATE: 3/28/2019
TASK ORDER NUMBER: 18F4605



Path: L:\work\GIS\MCAS_Beaufort\maps\PA Report\Figure 2- Western.mxd

- Legend**
- Potential PFAS Investigation Area
 - Property Boundary
 - No Further Action at this Time
 - Potential PFAS Investigation
 - Former Runway and Taxiway



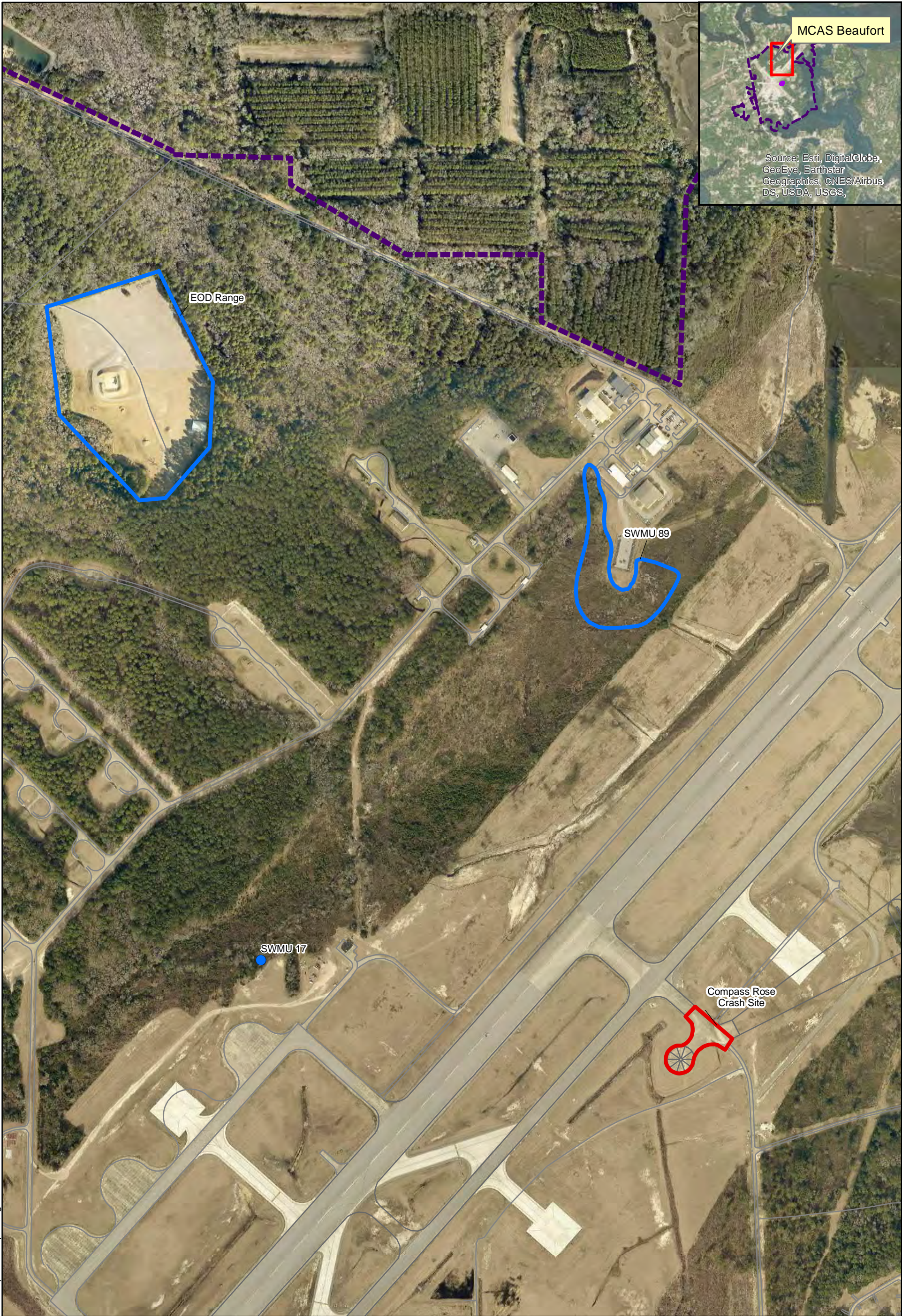
0 200 400 Feet
1 inch = 400 feet

FIGURE 2
WESTERN AREAS AND BUILDINGS
MCAS BEAUFORT, SOUTH CAROLINA








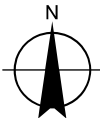
REQUESTED BY: TSR	DATE: 10/4/2018
DRAWN BY: LLM	TASK ORDER: 18F4605

Path: L:\work\GIS\MCAS_Beaufort\maps\PA Report\Figure 3- Northern.mxd



Legend

-  No Further Action at this Time
-  Property Boundary
-  No Further Action at this Time
-  Potential PFAS Investigation
-  Former Runway and Taxiway



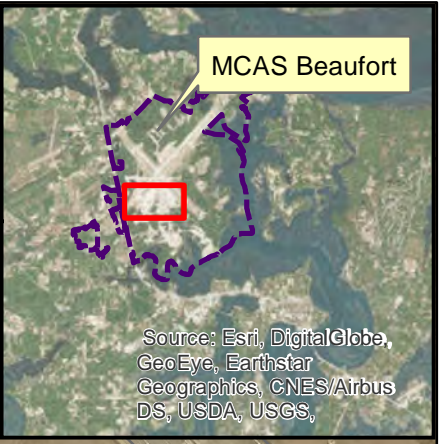
0 250 500
Feet
1 inch = 500 feet

FIGURE 3
NORTHERN AREAS AND BUILDINGS
MCAS BEAUFORT, SOUTH CAROLINA



REQUESTED BY: TSR	DATE: 9/25/2018
DRAWN BY: LLM	TASK ORDER: 18F4605

Path: L:\work\GIS\MCAS_Beaufort\maps\PA Report\Figure 4- Central.mxd



- Legend**
- Potential PFAS Investigation Area
 - No Further Action at this Time
 - No Further Action at this Time
 - Potential PFAS Investigation
 - Former Runway and Taxiway

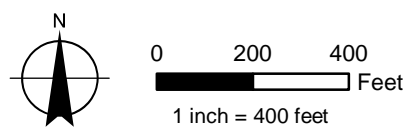
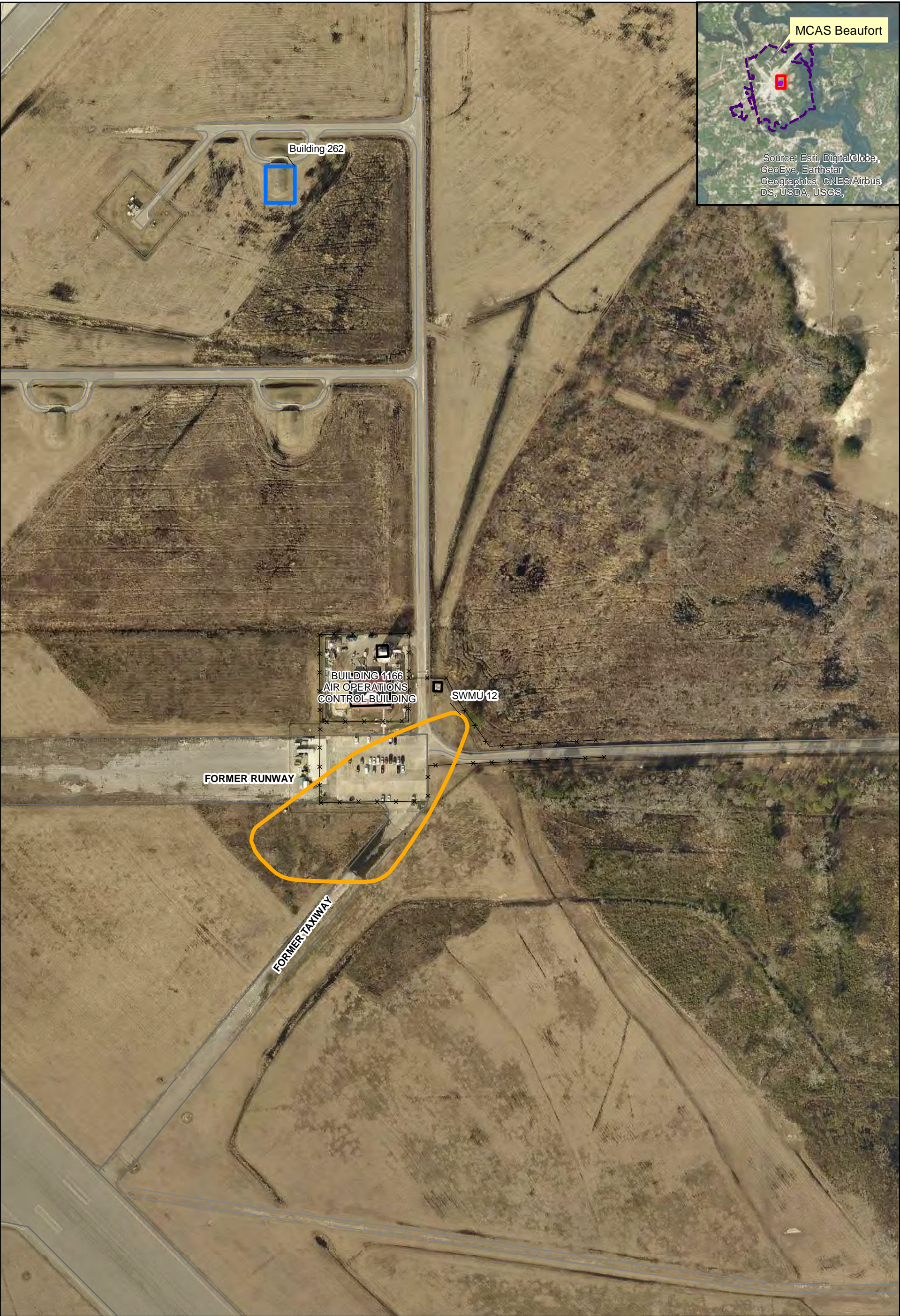


FIGURE 4
CENTRAL AREAS AND BUILDINGS
MCAS BEAUFORT, SOUTH CAROLINA

REQUESTED BY: TSR	DATE: 3/28/2019
DRAWN BY: LLM	TASK ORDER: 18F4605

Path: L:\work\GIS\MCAS_Beaufort\maps\PA Report\Figure 5- Eastern.mxd



Legend

- No Further Action at this Time

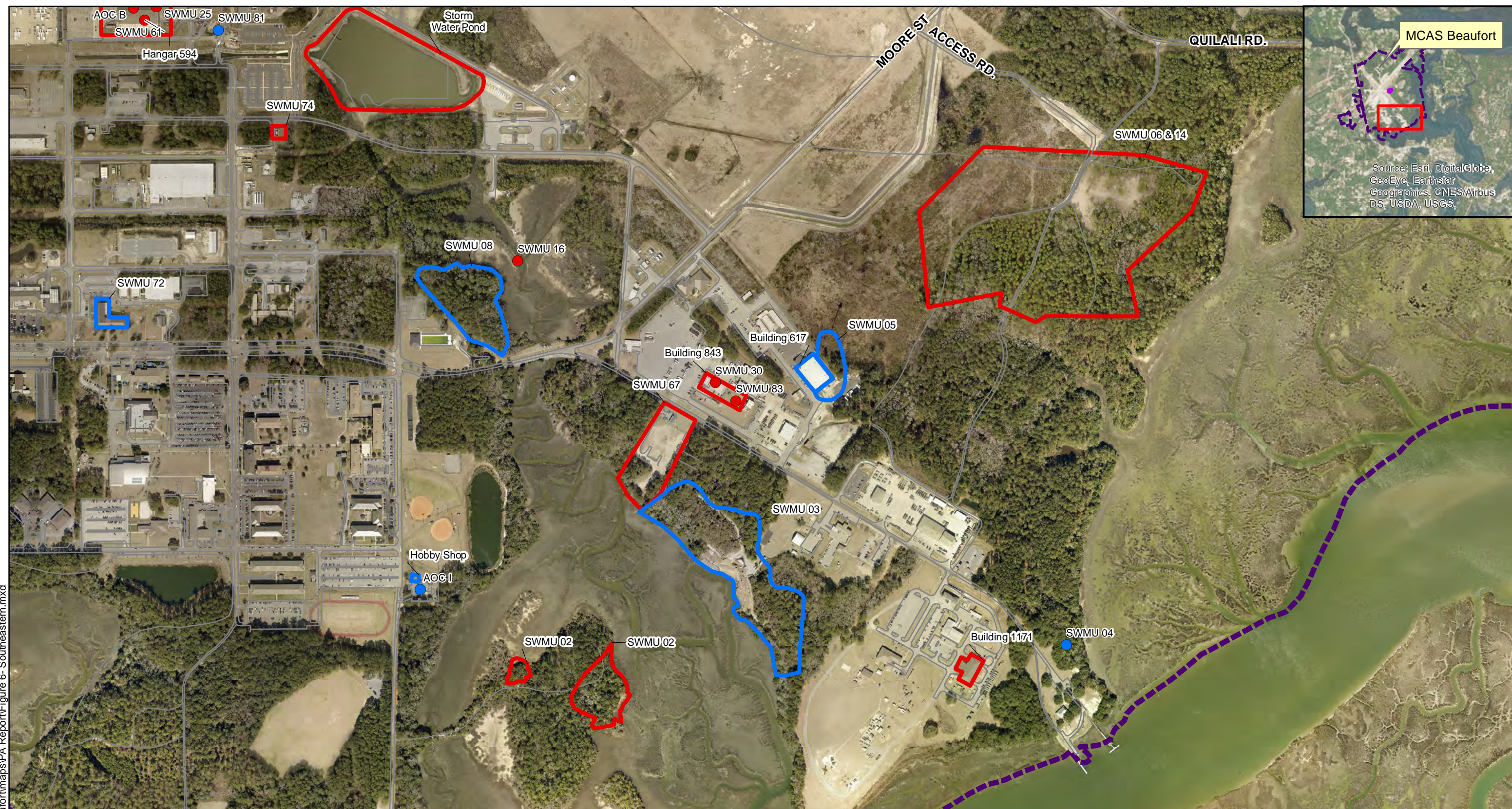
Current PFAS Investigation

Fence

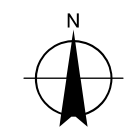
Former Runway and Taxiway

Existing Building
-
- 0 100 200
Feet
1 inch = 200 feet
- FIGURE 5
EASTERN AREAS AND BUILDINGS
MCAS BEAUFORT, SOUTH CAROLINA
-
- | | |
|-------------------|---------------------|
| REQUESTED BY: TSR | DATE: 9/25/2018 |
| DRAWN BY: LLM | TASK ORDER: 18F4605 |

Path: L:\work\GIS\MCAS_Beaufort\maps\PA Report\Figure 6- Southeastern.mxd



- Legend**
- Potential PFAS Investigation Area
 - No Further Action at this Time
 - No Further Action at this Time
 - Potential PFAS Investigation
 - ▬ Property Boundary
 - ▬ Former Runway and Taxiway



0 300 600 Feet
1 inch = 600 feet

FIGURE 6
SOUTHEASTERN AREAS AND BUILDINGS
MCAS BEAUFORT, SOUTH CAROLINA

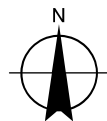


REQUESTED BY: TSR	DATE: 3/28/2019
DRAWN BY: LLM	TASK ORDER: 18F4605

Path: L:\work\GIS\MCAS_Beaufort\maps\PA Report\Figure 7- SouthWestern.mxd



- Legend**
- Potential PFAS Investigation Area
 - Property Boundary
 - No Further Action at this Time
 - Potential PFAS Investigation
 - Former Runway and Taxiway



0 200 400 Feet
1 inch = 400 feet

FIGURE 7
SOUTHWESTERN AREAS AND BUILDINGS
MCAS BEAUFORT, SOUTH CAROLINA

REQUESTED BY: TSR	DATE: 3/28/2019
DRAWN BY: LLM	TASK ORDER: 18F4605

Appendix A

AFFF Storage Inventories

Appendix A
AFFF Storage Inventories
PFAS Preliminary Assessment
MCAS Beaufort, Beaufort, South Carolina

Installation Name										AFFF Concentrate (Unused Product) Inventory for Removal				AFFF Rinsate or Contaminated Water Inventory for Removal								* One of these dates must be populated	
	Generator DoDAAC	Generator Status LQG, SQG, VSQG (If Known)	Generator EPA ID #	Physical Address and Bldg # for Pickup	POC Names(s) for Coordinating Removals	POC Email(s) for Coordinating Removals	POC Commercial Phone #(s) *Not DSN*	Forklift & Operator Available to Assist?	Normal Business Hrs Example: M-F 0800-1600	5-Gal Pails (Each)	55-Gal Drums (Each)	Any Size Totes (Each)	Bulk Other Than Totes (Gal)	5-Gal Pails (Each)	55-Gal Drums (Each)	Any Size Totes (Each)	Bulk Other Than Totes (Gal)	Total Quantity	Notes	AFFF Manufacture	Nomenclature / Trade Name	Manufa-cturer Date*	Shelf-Life Date*
MCAS Beaufort		LQG	SC1750216169	Structural Fire Department, Bldg 2085	Chief Darran Vaughn	darran.vaughn@usmc.mil	843-228-7293	Y	M-F 0800-1600	0	0	0	0	0	0	0	0	0		NA	NA	NA	NA
MCAS Beaufort	M00273	LQG	SC1750216169	ARFF, Bldg 1313	Sgt Timothy Sunday	timothy.sunday@usmc.mil	843-228-6289	Y	M-F 0800-1600	1	0	0	0	0	0	0	0	5		National Foam		Pre 6/16	NA
MCAS Beaufort	M00273	LQG	SC1750216169	ARFF, Bldg 612, Warehouse	Sgt Timothy Sunday	timothy.sunday@usmc.mil	843-228-6289	Y	M-F 0800-1600	161	0	0	0	0	0	0	0	805		ANSULITE	ANSULITE 3% POLAR SOLVENTS	11/11	NA
MCAS Beaufort	M00273	LQG	SC1750216169	ARFF, Bldg 612, Warehouse	Sgt Timothy Sunday	timothy.sunday@usmc.mil	843-228-6289	Y	M-F 0800-1600	200	0	0	0	0	0	0	0	1,000		ICL PERFORMANCE PRODUCTS	PHOS-CHEK 3% AFFF	9/16	NA
MCAS Beaufort	M00273	LQG	SC1750216169	ARFF, Bldg 262, Bunker	Sgt Timothy Sunday	timothy.sunday@usmc.mil	843-228-6289	Y	M-F 0800-1600	21	0	0	0	0	0	0	0	105		ANSULITE	ANSULITE 3% POLAR SOLVENTS	Pre 6/16	NA
MCAS Beaufort	M00273	LQG	SC1750216169	ARFF, Bldg 262, Bunker	Sgt Timothy Sunday	timothy.sunday@usmc.mil	843-228-6289	Y	M-F 0800-1600	109	0	0	0	0	0	0	0	545		ICL PERFORMANCE PRODUCTS	PHOS-CHEK 3% AFFF	9/16	NA
MCAS Beaufort		LQG	SC1750216169	Joint Hazmin Center (JHC), Bldg 1270	Walter McCall	walter.mccall@usmc.mil	843-228-7295	Y	M-F 0800-1600	3	0	0	0	0	0	0	0	15		ICL PERFORMANCE PRODUCTS	PHOS-CHEK 3% AFFF	9/16	NA
MCAS Beaufort		LQG	SC1750216169	Joint Hazmin Center (JHC), Bldg 1270	Walter McCall	walter.mccall@usmc.mil	843-228-7295	Y	M-F 0800-1600	1	0	0	0	0	0	0	0	5		ICL PERFORMANCE PRODUCTS	PHOS-CHEK 3% AFFF	12/15	NA
MCAS Beaufort		LQG	SC1750216169	NREAO, Tank 979	Chris Vaigneur	christopher.vaigneur@usmc.mil	843-228-6461	Y	M-F 0800-1600	0	0	0	0	0	0	0	427	427	Waste Tank	AFFF Rinsate	NA	NA	NA
MCAS Beaufort		LQG	SC1750216169	NREAO, Bldg 1205	Chris Vaigneur	christopher.vaigneur@usmc.mil	843-228-6461	Y	M-F 0800-1600	1	8	0	0	0	0	0	0	445		Various	Various	Pre 6/16	NA
MCAS Beaufort		LQG	SC1750216169	NREAO, Bldg 1205	Chris Vaigneur	christopher.vaigneur@usmc.mil	843-228-6461	Y	M-F 0800-1600	0	7	0	0	0	0	0	0	385	Waste Drum	Debris c/w AFFF	NA	NA	NA
MCAS Beaufort		LQG	SC1750216169	NREAO, Bldg 1205	Chris Vaigneur	christopher.vaigneur@usmc.mil	843-228-6461	Y	M-F 0800-1600	0	0	0	0	0	3	0	0	165	Waste Drum	AFFF Rinsate	NA	NA	NA
MCAS Beaufort		LQG	SC1750216169	ATSI Warehouse 617	Molly Grissom	mgrissom@ahtna.net	843-228-6129	Y	M-F 0800-1600	0	12	0	0	0	0	0	0	660		Chem-Guard	3%	7/31/15	NA
MCAS Beaufort		LQG	SC1750216169	ATSI Warehouse 617	Molly Grissom	mgrissom@ahtna.net	843-228-6129	Y	M-F 0800-1600	0	3	0	0	0	0	0	0	165		Chem-Guard	3%	9/4/15	NA
MCAS Beaufort		LQG	SC1750216169	ATSI Warehouse 617	Molly Grissom	mgrissom@ahtna.net	843-228-6129	Y	M-F 0800-1600	1	0	0	0	0	0	0	0	5		Chem-Guard	3%	NA	NA
MCAS Beaufort		LQG	SC1750216169	ATSI Warehouse 617	Molly Grissom	mgrissom@ahtna.net	843-228-6129	Y	M-F 0800-1600	0	1	0	0	0	0	0	0	55		Buckeye	3%	NA	NA

Appendix A
AFFF Storage Inventories
PFAS Preliminary Assessment
MCAS Beaufort, Beaufort, South Carolina

Unit	Location	Vehicle/System ID	POC	Installed Capacity (gal)	Notes
SFD	Bldg 595	Eng 88	Darran Vaughn	50	3M 6%; Manufacture Date Unknown
SFD	Bldg 595	Eng 89	Darran Vaughn	50	3M 6%; Manufacture Date Unknown
SFD	Bldg 595	Ladder 88	Darran Vaughn	50	3M 6%; Manufacture Date Unknown
ARFF	Bldg 1313	31-FSS (USMC 620630) (TM-280A)	Sgt Timothy Sunday	80	Unknown Brand and Manufacture Date
ARFF	Bldg 1313	31-FSS (USMC 620725) (TM-280A)	Sgt Timothy Sunday	80	Unknown Brand and Manufacture Date
ARFF	Bldg 1313	Truck 15 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
ARFF	Bldg 1313	Truck 16 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
ARFF	Bldg 1313	Truck 17 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
ARFF	Bldg 1313	Truck 18 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1313	Truck 20 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1313	Truck 21 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1313	Truck 22 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1313	Truck 26 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1313	Truck 27 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1313	Truck 28 (P-19)	Sgt Timothy Sunday	130	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1171	USMC 620583 (TM-280A)	Sgt Jason Moxley	80	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1171	Twin-Agent Unit (450/100)	Sgt Jason Moxley	100	Unknown Brand and Manufacture Date
MWSD-31	Bldg 1171	Twin-Agent Unit (450/100)	Sgt Jason Moxley	100	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 728	Fixed System	Joe Otterbine	1,100	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 729	Fixed System	Joe Otterbine	1,100	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 414	Fixed System	Joe Otterbine	6,000	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 418	Fixed System	Joe Otterbine	3,200	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 594	Fixed System	Joe Otterbine	3,200	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 1084	Fixed System	Joe Otterbine	2,000	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 1256	Fixed System	Joe Otterbine	300	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 2145	Fixed System	Joe Otterbine	1,200	Unknown Brand and Manufacture Date
MCAS Beaufort	Hangar 3060	Fixed System	Joe Otterbine	1,800	Chemguard 3%; Manufactured 8/16
MCAS Beaufort	Hangar 1331	Fixed System	Joe Otterbine	1,600	

Appendix A
AFFF Storage Inventories
PFAS Preliminary Assessment
MCAS Beaufort, Beaufort, South Carolina

USMC Fire Protection & Emergency Services AFFF in Fixed System Storage Tanks									
Location			AFFF Properties					Containment (Yes or No)	
Installation	Building Number	Room Number	AFFF Manufacture	Trade Name	Percentage	Manufactured Date	Quantity	Activation	Storage
MCAS Beaufort	728	Hanger Deck	N/A	AFFF	3%	N/A	1,100	No	No
MCAS Beaufort	729	Hanger Deck	N/A	AFFF	3%	N/A	1,100	No	No
MCAS Beaufort	414	Mechanical Rm	N/A	AFFF	3%	N/A	6,000	No	No
MCAS Beaufort	418	Mechanical Rm	N/A	AFFF	3%	N/A	3,200	No	No
MCAS Beaufort	594	RM 144 & 151	N/A	AFFF	3%	N/A	3,200	No	No
MCAS Beaufort	1084	Hanger Deck	N/A	AFFF	3%	N/A	2,000	No	No
MCAS Beaufort	1256	RM 208	N/A	AFFF	3%	N/A	300	Yes	Yes
MCAS Beaufort	2145	RM 128	N/A	AFFF	3%	N/A	1,200	Yes	Yes
MCAS Beaufort	2146		NA	AFFF	TBD	TBD	1,600	Yes	Yes

Appendix A
AFFF Storage Inventories
PFAS Preliminary Assessment
MCAS Beaufort, Beaufort, South Carolina

USMC Fire Protection & Emergency Services AFFF in Apparatus or Equipment Storage Tanks							
Apparatus			AFFF Properties				
Installation	Vehicle ID	Vehicle Type	AFFF Manufacture	Trade Name	Percentage	Manufactured Date	Quantity (gallon)
MCAS Beaufort	620583	TM-280A	Unknown	NA	NA	N/A	80
MCAS Beaufort	Unknown	TAU	Unknown	NA	NA	N/A	100
MCAS Beaufort	Unknown	TAU	Unknown	NA	NA	N/A	100
						Total	280

Appendix B

AFFF Spill Records

SPILL REPORT FORM
Marine Corps Air Station, Beaufort, South Carolina

MEMORANDUM

From: Molly Grissom, ATSE ES + H mgr.

To: Environmental Affairs Officer

Via:

Subj: HM/HW/POL SPILL REPORT

Ref: (a)

1. In compliance with reference (a), the following report of a hazardous substance/petroleum, oil, lubricants (POL) spill/release is made:

- a. Date of incident: 7/25/2011 Time of Incident: 0926 hrs
- b. Person Reporting; Name: Vinny Francese Rank: CIV
- c. Location; Unit/ Activity: HUSH HOUSE Bldg: _____
- d. Substance: AFFF Amount (Gallons): 2 gals
- e. Description/details of events: Storage Tanks containing AFFF leaked at valves. AFFF escaped the containment berm + enter drain.
- f. On-scene Supervisor: Molly Grissom
- g. NOTIFICATION:
- | | Work Hrs | After Hrs | Time Called |
|--|-------------|-----------|-----------------|
| (1) NREAO <u>MANDATORY</u> | (6461/6458) | (911) | <u>0920 hrs</u> |
| (2) PMO Emergency Dispatcher (AS REQUIRED) | | (911) | <u>N/A</u> |
- h. ADDITIONAL COMMENTS (Cause of spill/release and corrective actions taken):
Valves on Storage tanks tightened, Spill cleaned using absorbent white cotton mats obtained from NREAO as well as recycleable blue mats. Drained covered to prevent any further intrusion. Additionally, berm was placed absorbent boom around inside perimeter of berm.

SUPERVISOR'S SIGNATURE: _____

Molly Grissom

SPILL REPORT FORM
MARINE CORPS AIR STATION BEAUFORT

MEMORANDUM

From: R. Brown, MOTOR T MAINT.
To: Environmental Affairs Officer
Via:
Subj: HM/HW/POL SPILL REPORT

Ref: (a)

1. In compliance with reference (a), the following report of a hazardous substance/petroleum, oil, lubricants (POL) spill/release is made:

a. Date of incident: Dec 8, 2011 Time of Incident: 1415

b. Person Reporting; Name: L. VINYFRANCESE Rank: CIV.

c. Location; Unit/Activity: MOTOR T MAINTENCE Bldg: 843

d. Substance: AFFF Amount(Gallons): 100 GAL

e. Description/details of events MECHANIC WAS TOLD THE TANK WAS EMPTY. WHEN HE REMOVED A PIPE FOR MAINTENANCE, THE AFFF SPILLED OUT. NREAO WAS CALLED AND RESPONDED IN TEN MINUTES.

f. On-scene Supervisor: MR R. BROWN

g. NOTIFICATION:

(1) NREAO MANDATORY

Work Hrs. (6461)	After Hrs. (911)	TIME CALLED
		<u>1420</u>

(2) PMO Emergency Dispatcher (AS REQUIRED) (911)

h. ADDITIONAL COMMENTS (Cause of spill/release and corrective actions taken): MOTOR T WORKERS CONTAINED THE SPILL. NREAO PROVIDED A PUMP TRUCK FOR CLEAN UP. THE SPILL WAS ON A HARD PAVED SURFACE. NOT DIRT SURFACE.

IN THE FUTURE TANKS WILL BE CHECKED BEFORE MAINTENANCE

SUPERVISOR'S
SIGNATURE

R. Brown

SPILL REPORT FORM
Marine Corps Air Station, Beaufort, South Carolina

MEMORANDUM

From: VMA(AW)-533
To: Environmental Affairs Officer
Via:
Subj: HM/HW/POL SPILL REPORT

Ref: (a)

1. In compliance with reference (a), the following report of a hazardous substance/petroleum, oil, lubricants (POL) spill/release is made:

- a. Date of incident: 120626 Time of Incident: 1700
- b. Person Reporting; Name: Dougherty, Robert L Rank: CPL
- c. Location; Unit/Activity: 533 hangar Bldg: 418
- d. Substance: AFFF Foam Amount (Gallons): 7,100
- e. Description/details of events: AFFF dispensers went off, covering entire hangar floor.
- f. On-scene Supervisor: Capt. Waller
- g. NOTIFICATION:
- | | Work Hrs | After Hrs | Time Called |
|--|----------|-----------|----------------|
| (1) NREAO <u>MANDATORY</u> | (7370) | (911) | <u>On site</u> |
| (2) PMO Emergency Dispatcher (AS REQUIRED) | | (911) | <u>N/A</u> |
- h. ADDITIONAL COMMENTS (Cause of spill/release and corrective actions taken):
LCPL BRUDZYNSKI accidentally set off a fire alarm when walking past it. She claims that her shoulder nudged it as she turned around next to it.

SUPERVISOR'S SIGNATURE: [Signature] cm/6207

SPILL REPORT FORM
Marine Corps Air Station, Beaufort, South Carolina

MEMORANDUM

From:

To: Environmental Affairs Officer

Via:

Subj: HM/HW/POL SPILL REPORT

Ref: (a)

1. In compliance with reference (a), the following report of a hazardous substance/petroleum, oil, lubricants (POL) spill/release is made:

- a. Date of incident: 2/12/16 Time of Incident: 0830
- b. Person Reporting; Name: Fire Dept Rank: _____
- c. Location; Unit/Activity: VMFA-122 Bldg: 414
- d. Substance: AFFF Amount (Gallons): 60
- e. Description/details of events: An AFFF tank was
pumped down to avoid freezing damage
- f. On-scene Supervisor: Todd Lawson
- g. NOTIFICATION:
- | | Work Hrs | After Hrs | Time Called |
|--|-------------|-----------|-------------|
| (1) NREAO <u>MANDATORY</u> | (6461/6458) | (911) | <u>0830</u> |
| (2) PMO Emergency Dispatcher (AS REQUIRED) | | (911) | _____ |
- h. ADDITIONAL COMMENTS (Cause of spill/release and corrective actions taken):
AFFF deposited into Tank 979

SUPERVISOR'S SIGNATURE: _____

SPILL REPORT FORM
MARINE CORPS AIR STATION BEAUFORT

From: VMFA-122
To: Environmental Affairs Officer
Via: MAG-31 Environmental

Date: 10/28/16

Subj: HM/HW/POL SPILL/RELEASE REPORT

Ref: (a) MCO P5090.2A
(b) MCAS Beaufort Hazardous Waste Management Plan

1. In compliance with the references, the following report of a hazardous substance/petroleum, oil, lubricants (POL) spill/release is made:

a. Date of Incident: 10-28-16 Time of Incident: _____
b. Location of Incident: 122 Hanger Bldg: 4114
c. Person Reporting; Name: Cpl Walter Rank: Cpl
d. Unit/Activity: 122 Hanger Fire Cannons Ext: 7475
e. Substance: AFFF Amount (Gallons): 275 gal

f. Description/details of events On 10/27 AFFF Cannons
went off at 1800

g. On-scene Supervisor: Sgt Young on 10/27 / Cpl Walter on 10/28

h. Notification: MANDATORY to call NTEAO and MAG HazMat for every spill!

	Work Hrs.	After Hrs.	TIME CALLED
1) NREAO	(7907/7370)	(911)	<u>1800</u>
2) PMO Dispatcher	(AS REQUIRED)	(911)	<u>1800</u>
3) MAG-31 HazMat	(6528/6529)	(575-7140)	<u>1800</u>

i. ADDITIONAL COMMENTS (Cause of spill/release and corrective actions taken):

At 1733 on 10/27 Sgt Young called public works because A-F-F
Cannon was leaking @ 1800 Cannons went off. 10/28 0730
TJM and Paco came to help clean the rest of the A-F-F
up since it was contained the night before

SUPERVISOR'S SIGNATURE _____

FIRST ENDORSEMENT

MAG RPT # _____

From: MAG-31 Environmental
To: NREAO

MAG-31 remarks: _____

SPILL REPORT FORM
Marine Corps Air Station, Beaufort, South Carolina

From:

To: NREAO, Environmental Compliance Section

Subj: SPILL REPORT

Ref: (a) ASO 4570.3A Ch. 2

1. In compliance with reference (a), the following report of a hazardous substance/petroleum, oil, lubricants (POL) spill/release is made:

- a. Date of Incident: 03 MAR 2018 Time of Incident: approx 073
- b. Person Reporting; Name: Michael Stephens Rank: Civ
- c. Location; Unit/ Activity: Hanger; H+HS Bldg: 1084
- d. Substance: Ansolite 370 AFFE Amount (Gallons): 2 320
- e. Cause/Recovery & Clean-up: Fire extinguishing agent released by cannon. Fire Dept. cleaned Hanger with fresh water. NREAO + PMO notified by MCAS Beaufort Fire Dept.

f. NOTIFICATION:	Work Hrs	After Hrs	Time Called
(1) NREAO MANDATORY	(6461/6458)	(911)	<u>?</u>
(2) PMO Emergency Dispatcher	***	(911)	<u>?</u>

SUPERVISOR'S SIGNATURE: 

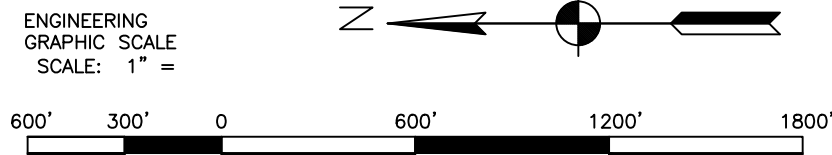
Appendix C

MCAS Beaufort General Development Map



BLDG	GRID	BLDG	GRID	BLDG	GRID	BLDG	GRID	BLDG	GRID	BLDG	GRID	BLDG	GRID
1077	Y12	1130	I14	1181	W16	1243	R11	1338	T12	3023	Q14		
1078	R11	1131	O7	1183	W16	1244	V13	1402	S20	3024	O9		
1080	L12	1133	U15	1183	W16	1245	V12	1497	V9	3025	M11		
1081	V15	1134	R9	1184	V16	1246	V12	2070	K10	3027	U15		
1082	T13	1135	R9	1186	T13	1247	V12	2071	O11	3031	S12		
1083	S13	1136	R10	1191	S11	1248	V13	2072	T14	3032	S12		
1084	R9	1138	R11	1196	O7	1251	I11	2075	S17	3033	S12		
1085	V8	1140	V12	1197	I11	1252	S11	2076	V8	3034	S12		
1086	V8	1142	V11	1202	V11	1253	S10	2077	V9	3035	S12		
1088	S9	1143	L7	1204	V15	1254	S10	2078	O7	3036	S12		
1089	L12	1144	R10	1205	O7	1255	W15	2080	V11	3040	T9		
1091	M10	1146	X12	1206	V15	1256	S12	2082	S10	3043	F17		
1092	M10	1147	W13	1207	R11	1258	O7	2085	T10	3044	M16		
1093	W16	1148	X12	1208	S9	1260	T10	2088	W16	3045	S12		
1094	W16	1150	W9	121	W13	1263	Q11	2089	U12	3048	T10		
1095	V10	1151	T8	1212	W17	1268	K10	2090	U12	3060	R12		
1100	V9	1152	W15	1213	S12	1269	P8	2091	I14	3061	S12		
1102	V16	1153	W15	1215	S9	1270	R11	2093	U11	3063	U14		
1103	S9	1156	T8	1218	V11	1277	R11	2094	I14				
1107	U8	1161	I14	1219	V12	1283	U10	2095	U12				
1108	V10	1162	W16	1222	Q18	1284	U11	2097	R18				
1112	L7	1166	O13	1226	T14	1307	I14	2098	R18				
1113	L7	1171	W16	1231	V12	1310	O14	2145	U9				
1114	R11	1172	T9	1236	W15	1313	Q11	2146	S12				
1116	V15	1173	T9	1236A	W15	1325	Q11	2199	U11				
1117	R11	1174	W12	1237	V8	1326	R9	3009	T10				
1121	V12	1176	I17	1238	Y13	1328	T7	3012	V11				
1122	V13	1178	V16	1239	Y13	1331	P8	3021	L15				
1129	M16	1179	W16	1240	O7	1333	V10	3022	M13				
		1180	W16	1242	X17								

BLDG	GRID	BLDG	GRID	BLDG	GRID	BLDG	GRID
74	R11	602	V10	746	P11	968	R11
154	Y11	606	N12	747	P11	970	S20
259	O12	607	Q14	769	Y11	976	V15
260	O13	608	O14	776	P10	976	P8
262	N13	609	N7	780	V16	979	T12
311	X17	610	U13	782	V10	980	I11
411	T8	611	T11	784	R10	982	X16
402	T8	612	T9	785	R10	986	S20
403	T8	613	T8	786	R10	987	X16
401	R11	614	T11	790	V12	988	L6
409	U13	615	T9	795	S18	989	W11
410	R17	616	U15	799	V17	991	Y12
411	T11	617	U15	807	V17	992	V16
414	T10	618	U14	825	U8	1001	W16
418	S9	620	U14	834	L9	1002	R10
419	K22	621	U14	835	L9	1003	V15
420	K22	622	U14	837	L9	1004	P7
421	K10	623	U14	840	J15	1006	P7
422	J12	624	U14	843	V15	1007	T14
423	I12	625	U15	844	I13	1010	Y12
424	J13	626	V15	846	J13	1011	W16
425	J13	628	T14	847	J13	1013	U15
427	T12	628	T14	848	J12	1014	S11
429	R11	649	O12	849	J12	1015	V15
430	T12	658	Q18	850	K10	1016	V16
431	R18	659	V15	851	K10	1020	R10
432	R18	660	W16	852	K10	1021	R10
433	R18	661	W16	853	K10	1023	T13
444	L15	662	W16	854	L10	1024	T13
445	O14	665	L14	855	L10	1025	T10
446	N14	691	R10	856	R11	1028	X16
447	N7	696	V8	857	S9	1030	O7
448	N7	698	Y13	860	Q11	1031	T9
449	N7	702	R10	861	Q10	1032	V13
550	R12	703	U11	890	V9	1033	U12
551	T14	704	V10	895	U12	1034	V10
553	V11	707	V12	898	O7	1035	W16
554	S17	708	O11	906	O15	1036	U15
555	T10	711	Y12	907	O15	1039	S12
564	V10	714	V15	913	X17	1042	U10
565	V9	716	R11	915	M9	1043	V8
566	V10	728	R10	916	O13	1046	O11
567	S20	720	T11	921	S9	1049	S10
568	S20	722	M16	923	R11	1050	U15
569	S20	723	R9	924	S11	1051	V15
570	S20	727	R10	931	S20	1053	V9
572	V13	728	R10	932A	W12	1054	T11
573	V13	729	R11	933M	W12	1061	V9
575	W13	730	I14	934	W12	1062	S11
576	R18	731	I14	940	U12	1063	V9
577	W12	733	J10	941	T14	1064	V16
584	T10	734	K11	942	T14	1065	V16
585	T11	735	K11	950	S17	1066	V16
594	S11	736	J12	951	R11	1067	V16
596	U11	737	J12	953	R10	1068	V16
597	U0	738	I13	954	V15	1070	V15
598	U12	740	J17	956	Q18	1071	M11
599	U11	741	J17	957	T11	1075	V11
600	Q11	744	T8	965	I11	1076	M6
601	V10			967	R11		



PW DWG NO.		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
DES		MARINE CORPS AIR STATION, BEAUFORT, S.C.	
DR			
CHK		GENERAL DEVELOPMENT MAP	
SUPV		AIR STATION MAP	
SATISFACTORY TO		DATE	CODE IDENT NO. NAVFAC DRAWING NO.
APPROVED		DATE	80091
OFFICER IN CHARGE		SCALE	CONSTR. CONTR. NO. N62467- -C-
		SHEET	OF

Appendix D

AFFF Waste Disposal Manifests

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

SC1750215158

2. Page 1 of

3. Emergency Response Phone

843-228-7121

4. Waste Tracking Number

06102015-01

5. Generator's Name and Mailing Address

MARINE CORPS AIR STATION/ENVIRONMENTAL OFFICE
P.O. BOX 55024
BEAUFORT, SC 29504

Generator's Site Address (if different than mailing address)

Generator's Phone:

843-228-6458

6. Transporter 1 Company Name

FERIN VAC

U.S. EPA ID Number

SCR000771899

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

ABM AMERICAN BIO MASS
36 CLEARWATER DRIVE
WALTERBORO, SC 29488

U.S. EPA ID Number

152630-2001

Facility's Phone:

843-893-2580/843-595-5764

9. Waste Shipping Name and Description

10. Containers

No.

Type

11. Total
Quantity

12. Unit
Wt./Vol.

1. AER-O-METER NON-HAZARDOUS/NON-REGULATED #USW-07004

01

TT

5000

G

2.

3.

4.

13. Special Handling Instructions and Additional Information

NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT BILLY DRAWDY 843-228-7121 CO110145
CONTRACT #M60169-15-P-SAD8

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offoror's Printed/Typed Name

Timothy Whaley

Signature

Timothy Whaley

Month Day Year
6 10 15

15. International Shipments

☐

Import to U.S.

☐

Export from U.S.

Port of entry/exit:

Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Timothy Whaley

Signature

Timothy Whaley

Month Day Year
6 10 15

Transporter 2 Printed/Typed Name

Signature

Timothy Whaley

Month Day Year
6 10 15

17. Discrepancy

17a. Discrepancy Indication Space

☐

Quantity

☐

Type

☐

Residue

☐

Partial Rejection

☐

Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Robert Hogan

Signature

Robert Hogan

Month Day Year
6 10 15

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,

Hereby certifies all materials described in

Manifest / Bill of Lading # 06102015-01

Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 10, 2015

For:

MARINE CORPS AIR STATION/ENVIRONMENTAL
OFFICE

Joel R. Hogan

General Manager

Of

American Bio Mass, LLC

**NON-HAZARDOUS
WASTE MANIFEST**

1. Generator ID Number

SC1750216169

2. Page 1 of

3. Emergency Response Phone

843-228-7121

4. Waste Tracking Number

20150609-02

5. Generator's Name and Mailing Address

MARINE CORPS AIR STATION/ENVIRONMENTAL OFFICE
P.O. BOX 55024
BEAUFORT, SC 29904

Generator's Site Address (if different than mailing address)

Generator's Phone:

843-228-6458

6. Transporter 1 Company Name

Fenn VAC

U.S. EPA ID Number

SCR 000771899

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

ABM-AMERICAN BIO MASS
36 CLEARWATER DRIVE
WALTERBORO, SC 29488

U.S. EPA ID Number

152533 2001

Facility's Phone:

843-803-2580/843-560-5764

9. Waste Shipping Name and Description

10. Containers

No.

Type

11. Total
Quantity

12. Unit
Wt./Vol.

1. AER-O-METER NON-HAZARDOUS/NON-REGULATED #USW-07004

01

TT

5000

G

2.

3.

4.

13. Special Handling Instructions and Additional Information

NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT BILLY DRAWDY 843-228-7121 CD110146

CONTRACT # M60169-15-P-SAQ8

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's Offeror's Printed/Typed Name

Timothy Whaley

Signature

Timothy Whaley

Month Day Year

6 9 15

15. International Shipments

☐ Import to U.S.

☐ Export from U.S.

Port of entry/exit:

Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Linda Cromwell

Signature

Linda Cromwell

Month Day Year

6 9 15

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

☐ Quantity

☐ Type

☐ Residue

☐ Partial Rejection

☐ Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17c

Printed/Typed Name

Robert Hogan

Signature

Robert Hogan

Month Day Year

6 9 15

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,
Hereby certifies all materials described in
Manifest / Bill of Lading # 20150609-02
Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 9, 2015

For:

MARINE CORPS AIR STATION ENVIRONMENTAL
OFFICE

Joel R. Hogan
General Manager
Of
American Bio Mass, LLC

**NON-HAZARDOUS
WASTE MANIFEST**

1. Generator ID Number

SC1750216169

2. Page 1 of

3. Emergency Response Phone

843-228-7121

4. Waste Tracking Number

20150609-01

5. Generator's Name and Mailing Address

MARINE CORPS AIR STATION/ENVIRONMENTAL OFFICE
P.O. BOX 55024
BEAUFORT, SC 29904

Generator's Site Address (if different than mailing address)

Generator's Phone: 843-228-6458

6. Transporter 1 Company Name

Fenn VAC

U.S. EPA ID Number

SC8000771899

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

ABM AMERICAN BIO MASS
36 CLEARWATER DRIVE
WALTERBORO, SC 29488

U.S. EPA ID Number

152530-2001

Facility's Phone: 843-893-2580/843-500-5764

9. Waste Shipping Name and Description

10. Containers

No.

Type

11. Total
Quantity

12. Unit
Wt./Vol.

1. AER-O-METER NON-HAZARDOUS/NON-REGULATED #JISW-07004

01

TT

5000

G

2.

3.

4.

13. Special Handling Instructions and Additional Information

NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT BILLY DRAWDY 843-228-7121 CO110146

CONTRACT # M60169 15-P-SA08

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name

Timothy Whaley

Signature

Timothy Whaley

Month Day Year

6 9 15

15. International Shipments

☐ Import to U.S.

☐ Export from U.S.

Port of export:

Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

LAMAR Cromwell

Signature

L-C

Month Day Year

6 9 15

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

☐ Quantity

☐ Type

☐ Residue

☐ Partial Rejection

☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Nathan Hudgins

Signature

Month Day Year

6 9 15

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,
Hereby certifies all materials described in
Manifest / Bill of Lading # 20150609-01
Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 9, 2015

For:

MARINE CORPS AIR STATION ENVIRONMENTAL
OFFICE

Joel R. Hogan
General Manager
Of
American Bio Mass, LLC

GENERATOR	NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number SC1750218169	2. Page 1 of	3. Emergency Response Phone 843-228-7121	4. Waste Tracking Number 20150608-11	
	5. Generator's Name and Mailing Address MARINE CORPS AIR STATION/ENVIRONMENTAL OFFICE P.O. BOX 55024 BEAUFORT, SC 29904			Generator's Site Address (if different than mailing address)			
	Generator's Phone: 843-228-6458						
	6. Transporter 1 Company Name FENN VAC LLe			U.S. EPA ID Number SCR 000 771889			
	7. Transporter 2 Company Name			U.S. EPA ID Number			
	8. Designated Facility Name and Site Address ABM-AMERICAN BIO MASS 36 CLEARWATER DRIVE WALTERBORO, SC 29488			U.S. EPA ID Number 152630-2001			
	Facility's Phone: 843-893-2580/843-598-5764						
	9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	
			No.	Type			
	1. AER-O-METER NON HAZARDOUS/NON REGULATED #USW-07004		01	TT	5000	G	
2.							
3.							
4.							
13. Special Handling Instructions and Additional Information NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT BILLY DRAWDY 843-228-7121 CO110145 CONTRACT # M60169-15-P-SA08							
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.							
INT'L	Generator's/Offor's Printed/Typed Name Timothy Whaley		Signature Timothy Whaley		Month Day Year 6 8 15		
	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:				
	Transporter Signature (for exports only):						
	16. Transporter Acknowledgment of Receipt of Materials						
TRANSPORTER	Transporter 1 Printed/Typed Name Lamar Cromwell		Signature		Month Day Year 6 8 15		
	Transporter 2 Printed/Typed Name		Signature		Month Day Year		
DESIGNATED FACILITY	17. Discrepancy						
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
	17b. Alternate Facility (or Generator)				Manifest Reference Number:		
	Facility's Phone:				U.S. EPA ID Number		
	17c. Signature of Alternate Facility (or Generator)				Month Day Year		
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a							
Printed/Typed Name Robert Hoque		Signature Robert Hoque		Month Day Year 6 8 15			

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,
Hereby certifies all materials described in
Manifest / Bill of Lading # 20150608-11
Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 8, 2015

For:

MARINE CORPS AIR STATION ENVIRONMENTAL
OFFICE

Joel R. Hogan
General Manager
Of
American Bio Mass, LLC

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number CFSOG	2. Page 1 of	3. Emergency Response Phone 843-228-6458	4. Waste Tracking Number 20150608-09
5. Generator's Name and Mailing Address MARINE CORPS AIR STATION P.O. BOX 55024 BEAUFORT, SC 29904		Generator's Site Address (if different than mailing address)			
Generator's Phone: 843-228-6458					
6. Transporter 1 Company Name FERR VAC		U.S. EPA ID Number SCK 000771 899			
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address ABM-AMERICAN BIO MASS 38 CLEARWATER DRIVE WALTERBORO, SC 29488		U.S. EPA ID Number 152630-2001			
Facility's Phone: 843-893-2580/843-599-5764					
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1. AER-O-METER NON-HAZARDOUS/NON-REGULATED #USW-07004		01	IT	5000	G
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT RALPH DAGIN 843-228-6458 CO110146 CONTRACT # M80169-15-P-PSAC					
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					
Generator's/Offeror's Printed/Typed Name Timothy Whaley		Signature Timothy Whaley		Month 6	Day 8
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:		Year 15	
Transporter Signature (for exports only):					
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Lamar Cromwell		Signature Lamar Cromwell		Month 6	Day 8
Transporter 2 Printed/Typed Name		Signature		Year 15	
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
Manifest Reference Number:					
17b. Alternate Facility (or Generator) U.S. EPA ID Number					
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator) Month Day Year					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Robert Hogan		Signature Robert Hogan		Month 6	Day 8
				Year 15	

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,

Hereby certifies all materials described in

Manifest / Bill of Lading # 20150608-09

Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 8, 2015

For:

MARINE CORPS AIR STATION

Joel R. Hogan

General Manager

Of

American Bio Mass, LLC

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number QES0G	2. Page 1 of	3. Emergency Response Phone 843-228-6458	4. Waste Tracking Number 20150605-03	
5. Generator's Name and Mailing Address NAVY CORPS AIR STATION P.O. BOX 5502 BEAUFORT, SC 29504			Generator's Site Address (if different than mailing address)			
Generator's Phone: 843-228-6458						
6. Transporter 1 Company Name FENN VAC LLC			U.S. EPA ID Number SCR 000 771899			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address AEM-AMERICAN BIO MASS 38 CLEARWATER DRIVE WALTERSBORO, SC 29488			U.S. EPA ID Number 152630-2001			
Facility's Phone: 843-843-2880/843-829-5784						
9. Waste Shipping Name and Description			10. Containers		11. Total	12. Unit
			No.	Type	Quantity	Wt./Vol.
1. AERO-METER NON-HAZARDOUS/NON-REGULATED #USW-07314			01	FT	5000	0
2.						
3.						
4.						
13. Special Handling Instructions and Additional Information NEEDS COSENT TO US WASTE 24-HR EMERGENCY CONTACT RALPH DAGIN 843-228-6458 CO110145 CONTRACT #M60188-1L-PPAC						
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.						
Generator's/Offlor's Printed/Typed Name Timothy Whaley			Signature <i>Timothy Whaley</i>		Month 6	Day 5
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.			Port of entry/exit: Date leaving U.S.:		Year 15	
16. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name LAWRENCE CROMWELL			Signature <i>L. Cromwell</i>		Month 6	Day 5
Transporter 2 Printed/Typed Name			Signature		Year 15	
17. Discrepancy						
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number:						
17b. Alternate Facility (or Generator) U.S. EPA ID Number						
Facility's Phone:						
17c. Signature of Alternate Facility (or Generator) Month Day Year						
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a						
Printed/Typed Name Robert Hogan			Signature <i>Robert Hogan</i>		Month 6	Day 5
					Year 15	

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,

Hereby certifies all materials described in

Manifest / Bill of Lading # 20150605-03

Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 5, 2015

For:

MARINE CORPS AIR STATION

Joel R. Hogan

General Manager

Of

American Bio Mass, LLC

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,
Hereby certifies all materials described in
Manifest / Bill of Lading # 20150605-04
Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 5, 2015

For:

MARINE CORPS AIR STATION

Joel R. Hogan
General Manager
Of
American Bio Mass, LLC

**NON-HAZARDOUS
WASTE MANIFEST**

1. Generator ID Number

SC1750216169

2. Page 1 of

3. Emergency Response Phone

843-228-7121

4. Waste Tracking Number

06102015-02

Generator's Site Address (if different than mailing address)

5. Generator's Name and Mailing Address

MARINE CORPS AIR STATION/ENVIRONMENTAL OFFICE
P.O. BOX 55024
BEAUFORT, SC 29904

Generator's Phone:

843-228-6458

6. Transporter 1 Company Name

Fenn VA

U.S. EPA ID Number

SCRC000771899

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

152630-2001

8. Designated Facility Name and Site Address

ABM-AMERICAN BIO MASS
36 CLEARWATER DRIVE
WALTERBORO, SC 29488

Facility's Phone:

843-893-2580/843-550-5764

10. Containers

No.

Type

11. Total
Quantity

12. Unit
Wt./Vol.

9. Waste Shipping Name and Description

1. AER-O-METER NON-HAZARDOUS/NON-REGULATED #USW-07004

01

TT

2502

G

2.

3.

4.

13. Special Handling Instructions and Additional Information

NEEDS CD SENT TO US WASTE 24HR EMERGENCY CONTACT BILLY DRAWDY 843-228-7121 CG110146
CONTRACT #MAG169 15-P-9A08

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name

Timothy Whaley

Signature

Timothy Whaley

Month Day Year

6 10 15

15. International Shipments

☐ Import to U.S.

☐ Export from U.S.

Port of entry/exi
Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Le Mon CRomwell

Signature

[Signature]

Month Day Year

6 10 15

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

☐ Quantity

☐ Type

☐ Residue

☐ Partial Rejection

☐ Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Robert Hogan

Signature

[Signature]

Month Day Year

6 10 15

DESIGNATED FACILITY TO GENERATOR

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,

Hereby certifies all materials described in

Manifest / Bill of Lading # 06102015-02

Were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

JUNE 10, 2015

For:

MARINE CORPS AIR STATION/ENVIRONMENTAL
OFFICE

Joel R. Hogan

General Manager

Of

American Bio Mass, LLC

**NON-HAZARDOUS
WASTE MANIFEST**

1. Generator ID Number
SC1750216169

2. Page 1 of 1
3. Emergency Response Phone
843-228-7121

4. Waste Tracking Number
3351

5. Generator's Name and Mailing Address
MARINE CORPS AIR STATION
HWY 21 BLDG 1205
BEAUFORT, SC 29504

Generator's Site Address (if different than mailing address)
HWY 21

Generator's Phone: 843-228-7121

6. Transporter 1 Company Name
Fenn-Vac

U.S. EPA ID Number
SC R000771859

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
ABM-AMERICAN BIO MASS
35 CLEARWATER DRIVE
WALTERBORO, SC 29488

U.S. EPA ID Number
152630-2001

Facility's Phone: 843-893-2580/843-599-5754

9. Waste Shipping Name and Description

10. Containers

No. Type

11. Total
Quantity

12. Unit
Wt./Vol.

1. AER-O-METER NON HAZARDOUS/NON REGULATED #USW-07004
AFFF/WATER

1 11 TT 5000 41,700 P

2.

3.

4.

13. Special Handling Instructions and Additional Information

NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT RALPH DAGIN 843-228-5456 CD

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offero's Printed/Typed Name

W.G. Duke, Jr.

Signature

[Signature]

Month Day Year
01 30 17

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.

Port of entry/exit:

Transporter Signature (for exports only):

Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Signature

Month Day Year

Joe F Scott

[Signature]

1 30 17

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

☐ Quantity

☐ Type

☐ Residue

☐ Partial Rejection

☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17c

Printed/Typed Name

Signature

Month Day Year

Robert Hogan

[Signature]

1 30 17

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,
hereby certifies all materials described in
Manifest / Bill of Lading # 3351
were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

January 30, 2017

For:

MARINE CORPS AIR STATION

Joel R. Hogan
General Manager
of
American Bio Mass, LLC

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: SC1750216169

2. Page 1 of 1

3. Emergency Response Phone: 843-228-7121

4. Waste Tracking Number: 3352

5. Generator's Name and Mailing Address: MARINE CORPS AIR STATION, HWY 21 BLDG 1205, BEAUFORT, SC 29904

Generator's Site Address (if different than mailing address): HWY 21

Generator's Phone: 843-228-5554

6. Transporter 1 Company Name: Fenn-Mac

U.S. EPA ID Number: SC R000771899

7. Transporter 2 Company Name:

U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ABM-AMERICAN BIO MASS, 36 CLEARWATER DRIVE, WALTERBORO, SC 29488

U.S. EPA ID Number: 152530-2001

Facility's Phone: 843-893-2580/843-599-5764

9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	No.	Type		
1. AER-O-METER NON HAZARDOUS/NON REGULATED #USW-07004 AFFF / WATER	1	TT	12.00	P
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information: NEEDS CD SENT TO US WASTE 24 HR EMERGENCY CONTACT RALPH DAGIN 843-228-6456 CD

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name: Timothy Whaley

Signature: Timothy Whaley

Month: 01 Day: 30 Year: 17

15. International Shipments: ☐ Import to U.S. ☐ Export from U.S.

Port of entry/exit: Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jeff Scott

Signature: Jeff Scott

Month: 1 Day: 30 Year: 17

Transporter 2 Printed/Typed Name: Signature:

Month: Day: Year:

17. Discrepancy

17a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator): U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator):

Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Robert Hogan

Signature: Robert Hogan

Month: 1 Day: 30 Year: 17

American Bio-Mass

Permit # 152630-2001

36 Clearwater Drive

P O Box 704

Walterboro, SC 29488

Phone: (843) 893-2580

Fax: (843) 893-3328

CERTIFICATE OF DISPOSAL

American Bio Mass LLC,
hereby certifies all materials described in
7Manifest / Bill of Lading # 3352
were disposed of in compliance with all applicable local,
state and federal regulations on the date of:

January 30, 2017

For:

MARINE CORPS AIR STATION

Joel R. Hogan
General Manager
of
American Bio Mass, LLC

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number SC1760215159	2. Page 1 of 1	3. Emergency Response Phone 843-225-5554	4. Waste Tracking Number 1116171205
	5. Generator's Name and Mailing Address MARINE CORPS AIR STATION HWY 21 BLDG 1205 BEAUFORT, SC 29906 Generator's Phone: 843-225-5554 Generator's Site Address (if different than mailing address)			
6. Transporter 1 Company Name Fenn-Van			U.S. EPA ID Number SCR000271899	
7. Transporter 2 Company Name			U.S. EPA ID Number	
8. Designated Facility Name and Site Address HERITAGE-WTI, INC. 1280 SAINT GEORGE STREET UNIT 1 EAST LIVERPOOL, OH 43920-3461 Facility's Phone: 800-545-7695			U.S. EPA ID Number OH05980513541	
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity
		No.	Type	12. Unit WL/Vol.
1. AFFF & WATER NON HAZARDOUS/NON REGULATED #161159-S		1	TT	3000 G
2.				
3.				
4.				
13. Special Handling Instructions and Additional Information NEEDS CO SENT TO US WASTE 24 HR EMERGENCY CONTACT RALPH DAGINI 843-225-5554 CO T134804				
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.				
Generator's/Officer's Printed/Typed Name Corey Jackson		Signature 		Month Day Year 10/16/17
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:				
16. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name Jesse Scott Signature 				
Transporter 2 Printed/Typed Name Signature 				
17. Discrepancy 17a. Discrepancy Indication Specs <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number: U.S. EPA ID Number:				
17b. Alternate Facility (or Generator) Facility's Phone: U.S. EPA ID Number:				
17c. Signature of Alternate Facility (or Generator) Month Day Year				
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a Printed/Typed Name Steve T. Gelman Signature 				
Month Day Year 10/17/17				

Shipped Out by Waste Stream

Start Date : 01-JAN-80

End Date : 24-MAY-18

Waste Stream : NR031

EPA ID : ALL

Waste Stream	Container Number	Chemical Nomenclature	DTID	LBS
NR031	BF20130076	AFFF AND WATER	M501693030T411	509
	BF20130077	AFFF AND WATER	M501693030T411	504
	BF20130078	AFFF AND WATER	M501693030T411	504
	BF20130079	AFFF AND WATER	M501693030T411	508
	BF20130146	AFFF AND WATER	M501693120T401	154
	BF20130150	AFFF AND WATER	M501693120T401	478
	BF20130210	AFFF AND WATER	M501693120T401	218
	BF20130462	AFFF AND WATER	M501693120T401	509
	BF20130466	AFFF AND WATER	M501693120T401	503
	BF20130467	AFFF AND WATER	M501693120T401	297
	BF20130461	AFFF AND WATER	M501693120T405	423
	BF20130465	AFFF AND WATER	M501693120T405	117
	BF20130401	USED AFFF	M501693120T482	492
	BF20130402	USED AFFF	M501693120T482	488
	BF20130403	USED AFFF	M501693120T482	370
	BF20130404	USED AFFF	M501693120T482	492
	BF20130149	USED AFFF	M501693120T483	365
	BF20130281	USED AFFF	M501693120T483	475
	BF20130282	USED AFFF	M501693120T483	516
	BF20130283	USED AFFF	M501693120T483	484
	BF20130396	USED AFFF	M501693120T483	519
	BF20130397	USED AFFF	M501693120T483	365
	BF20130398	USED AFFF	M501693120T483	474
	BF20130399	USED AFFF	M501693120T483	524
	BF20130145	AFFF AND WATER	M501693183T435	496
	BF20130147	AFFF AND WATER	M501693183T435	287
	BF20130154	AFFF AND WATER	M501693183T435	417
	BF20130584	AFFF AND WATER	M501693183T435	498
	BF20130585	AFFF AND WATER	M501693183T435	464
	BF20130208	AFFF AND WATER	M501694063T444	273
	BF20130261	AFFF AND WATER	M501694063T444	498
	BF20130262	AFFF AND WATER	M501694063T444	473
	BF20140495	AFFF AND WATER	M501694127T402	477
	BF20140496	AFFF AND WATER	M501694127T402	477
	BF20140498	AFFF AND WATER	M501694127T402	490
	BF20140497	AFFF AND WATER	M501694127T403	489
	BF20140207	AFFF AND WATER	M501694248T463	505
	BF20140216	AFFF AND WATER	M501694248T463	479
	BF20140217	AFFF AND WATER	M501694248T463	480
	BF20140222	AFFF AND WATER	M501694248T463	234
	BF20130870	USED AFFF	M501694330T497	116
	BF20130887	USED AFFF	M501694330T497	492

SENSITIVE BUT UNCLASSIFIED

Shipped Out by Waste Stream

Start Date : 01-JAN-80

End Date : 24-MAY-18

Waste Stream : NR031

EPA ID : ALL

Waste Stream	Container Number	Chemical Nomenclature	DTID	LBS
NR031	BF20130888	USED AFFF	M501694330T497	498
	BF20130895	USED AFFF	M501694330T497	48
	BF20110011	USED AFFF	M601691035T461	15
	BF20090539	USED AFFF	M601699183T483	77
	BF20140937	AFFF AND WATER	M501695034T430	312
	BF20150700	USED AFFF	M501696137T434	497
	BF20150701	USED AFFF	M501696137T434	475
	BF20150702	USED AFFF	M501696137T434	523
	BF20150703	USED AFFF	M501696137T434	508
	BF20150728	USED AFFF	M501695210T492	16
	BF20151077	USED AFFF	M501696217T445	490
	BF20151078	USED AFFF	M501696217T445	419
	BF20160231	USED AFFF	M501696137T434	471
	BF20160232	USED AFFF	M501696137T434	305
	BF20160233	USED AFFF	M501696137T434	440
	BF20160234	USED AFFF	M501696137T434	450
	BF20160244	USED AFFF	M501696137T434	469
	BF20160245	USED AFFF	M501696137T434	287
	BF20160266	USED AFFF	M501696137T434	176
	BF20160267	USED AFFF	M501696137T434	236
	BF20160268	USED AFFF	M501696137T434	520
	BF20160269	USED AFFF	M501696137T434	538
	BF20160270	USED AFFF	M501696137T434	527
	BF20160271	USED AFFF	M501696137T434	485
	BF20160272	USED AFFF	M501696217T445	248
	BF20160273	USED AFFF	M501696217T445	414
	BF20160670	USED AFFF	M501696217T445	242
	BF20160671	USED AFFF	M501696217T445	311
	BF20160733	USED AFFF	M501696217T445	323
	BF20160734	USED AFFF	M501696217T445	492
Totals by Waste Stream:				28745
Grand Total :				28745

Shipped Out by Waste Stream

Start Date : 01-JAN-80 End Date : 24-MAY-18 Waste Stream : NR199 EPA ID : ALL

Waste Stream	Container Number	Chemical Nomenclature	DTID	LBS
NR199	BF20110791	ABSORBENTS AND DEBRIS CONTAMINATED WITH AFFF	M601691251T456	131
	BF20161022	ABSORBENTS AND DEBRIS CONTAMINATED WITH AFFF	M501697066T435	214
Totals by Waste Stream:				345
Grand Total :				345

Shipped Out by Waste Stream

Start Date : 01-JAN-80 End Date : 24-MAY-18 Waste Stream : NR258 EPA ID : ALL

Waste Stream	Container Number	Chemical Nomenclature	DTID	LBS
NR258	BF20111227	ABSORBENT, DEBRIS CONTAMINATED WITH AFFF	M501692003T420	541
	BF20110475	ABSORBENT, DEBRIS CONTAMINATED WITH AFFF	M601691154T490	33
Totals by Waste Stream:				574
Grand Total :				574

Appendix E

Fire Response Narrative – February 2019

**Burton Fire District**Station: **81**
Shifts Or Platoon: **1**

Location: 3481 Trask PKY Beaufort (County) SC 29906	Incident Type: 142 - Brush or brush-and-grass mixture fire
Lat/Long: N 32° 27' 8.07" W 80° 43' 53.52"	FDID: 07303 Incident #: 2019-450 Exposure ID: 38024260 Exposure #: 0 Incident Date: 02/22/2019
Zone: BH1 - Burton Hill (County) Location Type: 1 - Street address	

Report Completed by:	Carneavale, Tony R	ID: 495	Date: 02/23/2019
Report Reviewed by:	Carneavale, Tony R	ID: 495	Date: 02/23/2019
Report Printed by:	Bright, Nichole	ID: 522	Date: 2/28/2019 Time: 14:10

Structure Type:	Property Use: 963 - Street or road in commercial area		
Automatic Extinguishment System Present: <input type="checkbox"/>	Detectors Present: <input type="checkbox"/>	Cause of Ignition: Cause undetermined after investigation	
Aid Given or Received: None	Primary action taken: 10 - Fire control or extinguishment, other		
Losses	Pre-Incident Values		
Property:	Property:	Civilian Injuries: 0	Fire Service Injuries: 0
Contents:	Contents:	Civilian Fatalities: 0	Fire Service Fatalities: 0
Total:	Total:	Total Casualties: 0	Total Fire Service Casualties: 0
Total # of apparatus on call: 2		Total # of personnel on call: 4	

NARRATIVE (1)
<p>Narrative Title: Brush Fire</p> <p>Narrative Author: Lewis, Christopher</p> <p>Narrative Date: 02/23/2019 06:40:47</p> <p>Narrative Apparatus ID: E81</p> <p>Narrative:</p> <p>Engine 81, Battalion 81, and Beaufort City Engine 4 were dispatched and responded to a brush fire near the address listed previously in the report.</p> <p>Battalion 81 arrived on scene and a United States Marine Corps Humvee was on scene extinguishing the fire with the assistance of a South Carolina State Trooper. Engine 81 arrived on scene as well.</p> <p>A Beaufort County Deputy Sheriff was on scene, as well as United States Marine Corps Police units.</p> <p>The fire was extinguished as Burton Fire District units arrived on scene by the United States Marine Corps Humvee that was on scene.</p> <p>Beaufort City Engine 4 was cancelled.</p> <p>Engine 81 ensured the fire was fully extinguished.</p> <p>Command was terminated and all Burton Fire District units returned to service and quarters.</p>

Member Making Report (Battalion Chief Tony R Carneavale): _____

Incident Reviewer (Battalion Chief Tony R Carneavale): _____

Appendix F

Annotated Bibliography

ABB Environmental Services, Inc., June 1992. RCRA Facility Investigation Work Plan, US MCAS, Beaufort, South Carolina.

This work plan provides general background information for MCAS Beaufort, and a detailed description of the environmental and geologic setting. Site history and background for each of the 13 SWMUs being investigated are also included.

APTIM Federal Services LLC, February 2018. Construction Completion Report, Interim Removal Action, SWMU 3 Additional Creek Bank Stabilization, MCAS Beaufort, Beaufort, South Carolina.

The CCR for SWMU 3 summarizes the approach and construction activities completed at SWMU 3 for additional creek bank stabilization. The technical approach included clearing debris and vegetation from the bank, regrading the bank, and placing rip-rap filled marine mattresses on the graded slope. The additional creek bank stabilization began at the southern end of the mattresses installed in 2015 and extended 300 linear feet to the south. The additional creek bank stabilization efforts were completed January through March 2017.

A.T. Kearney, Inc., October 1986. RCRA Facility Assessment Report.

The RCRA Facility Assessment aimed to identify all SWMUs and AOCs that presented a potential threat to human health or the environment at MCAS Beaufort. The report summarized the findings of file reviews and site visits, and evaluated the potential for release at each area. Details about the wastes generated at each site are provided and detailed background descriptions for each SWMU and AOC are included. The assessment reviewed 91 sites and identified 43 as requiring further action.

CB&I Federal Services LLC, June 2014. Final Interim Removal Action Work Plan SWMU 3 Creek Bank Stabilization, MCAS Beaufort, Beaufort, South Carolina.

This work plan presents the technical approach for creek bank stabilization at SWMU 3. The creek bank stabilization was planned to prevent future impacts to sediment in the adjacent salt marsh. The technical approach included clearing debris and vegetation from the bank, regrading the bank, and placing rip-rap filled marine mattresses on the graded slope.

CB&I, August 2015. Construction Completion Report SWMU 3 Creek Bank Stabilization, MCAS Beaufort, Beaufort, South Carolina.

The Construction Completion Report for SWMU 3 summarizes the approach and construction activities completed at SWMU 3 for creek bank stabilization. The technical approach included clearing debris and vegetation from the bank, regrading the bank, and placing rip-rap filled marine mattresses on the graded slope. Creek bank stabilization efforts were completed along 500 linear feet of creek bank, and the work was completed January through March 2015.

Dames and Moore, August 1986. Initial Assessment Study of MCAS, Beaufort, South Carolina and Naval Hospital, Beaufort, South Carolina.

The Initial Assessment Study presented information about 22 potentially contaminated sites at MCAS Beaufort. The report includes detailed background descriptions for each of the identified areas. The report also includes a detailed background section that provides information about the operational history, biological features, ecosystems, physical features, climatology, geology, soils, hydrology, migration potential, groundwater and surface water at MCAS Beaufort. The waste generation, materials handling, and waste processing are also summarized in the report.

McClelland Consultants, December 1989. Remedial Investigation, Verification Step, MCAS, Beaufort, South Carolina.

This report presents the findings of verification step investigations conducted at 12 hazardous or potentially hazardous sites at MCAS Beaufort. Soil, groundwater and surface water sampling were conducted, and the data were used to make recommendations. Six sites (SWMUs 1, 2, 3, 5, 8 and 16) were recommended for remedial investigations. Two sites (SWMUs 10 and 11) were recommended for no further action. Four sites (SWMUs 6, 7, 12, and 14) were recommended to have additional verification step investigation prior to recommendations being made. Details about the operational history for each site are included in the report.

SC DHEC, January 2004. Evaluation of US Marine Corps Air Station Under the RCRA Info Corrective Action Environmental Indicator Event Codes (CA725 and CA750) EPA ID No. SC1 750 216 169.

This memorandum summarizes the SCDHEC RCRA Evaluation at MCAS Beaufort in relation to the current human health exposures under control (CA725) and migration of contaminated groundwater under control (CA750). The evaluation found that there were no complete human health exposure pathways to contamination at MCAS Beaufort, and that groundwater contamination existed at several areas on site. The follow up actions included additional groundwater sampling to determine the extent of groundwater contamination and migration at these areas.

Shaw Environmental and Infrastructure, Inc., August 2012. Completion Report, Removal Actions SWMU 5 and SWMU 12, MCAS Beaufort, Beaufort, South Carolina.

This report summarizes the soil and debris removal activities completed at SWMU 5 and SWMU 12. Removal actions at SWMU 5 included excavating soil in August 2011. Confirmation sampling indicated that excavation activities were completed and the site was restored. Soil removal activities at SWMU 12 included an initial round of excavation. Confirmation sampling indicated that the excavation was not complete and an additional soil was removed. Additionally, surface debris was removed from SWMU 12, including concrete and metal items.

Sovereign Consulting, Inc., October 2014. Project Closeout Report, Debris Removal at SWMU 14, MCAS Beaufort, Beaufort, South Carolina.

This report summarizes the removal actions completed at SWMU 14. Surface solid debris was removed from SWMU 14 during the corrective measures. Debris removed included 5,374 tons of concrete rubble and 100 tons of steel.

Tetra Tech, Inc., November 2006. Basewide Background Report (Appendix Z of the RCRA Facility Investigation Report for SWMU 3, Borrow Pit Landfill)

The Basewide Background Report presents the basewide background database for soils at MCAS Beaufort. The report includes general facility background information and a detailed description of the geology and soils at the Site. The background information is a summary of the information presented in the Initial Assessment Study completed by Dames and Moore in 1986.

Tetra Tech, Inc., November 2006. RCRA Facility Investigation Report for SWMU 3 – Borrow Pit Landfill, MCAS Beaufort, Beaufort, South Carolina.

The RFI Report summarizes the results of groundwater, surface water, sediment and waste sampling at SWMU 3. The report summarizes the data evaluation, human health and ecological risks assessment and provides recommendations. A description and history of SWMU 3 is also included in the report.

Tetra Tech, Inc., February 2008. RCRA Facility Investigation Report for SWMU 5, Former Pesticide Rinsate Pit, MCAS Beaufort, Beaufort, South Carolina.

The RFI for SWMU 5 summarizes the 2005 and 2006 field activities including soil, groundwater and surface water sampling. The RFI also presents an evaluation of the data, a human health and ecological risk assessment, and provides recommendations. A description of the site and operational history is also included.

Tetra Tech, Inc., September 2008. RCRA Facility Investigation Report for SWMU 12, Former Pesticide Rinsate Pit, MCAS Beaufort, Beaufort, South Carolina.

The RFI for SWMU 12 summarizes the 2005 field activities including soil and groundwater sampling. The RFI also presents an evaluation of the data, a human health and ecological risk assessment, and provides recommendations. A description of the site and operational history is also included.

Tetra Tech, Inc., April 2010. Corrective Measures Study for SWMU 5 – Former Pesticide Rinsate Pit, MCAS Beaufort, Beaufort, South Carolina.

The RCRA CMS for SWMU 5 presents information used in support of identifying media cleanup standards, developing corrective measures alternatives, analyzing corrective measure alternatives and recommending corrective measures alternatives. The report includes a detailed site description and history, and a risk assessment for SWMU 5.

Tetra Tech, Inc., April 2010. RCRA Facility Investigation at SWMU 8, MCAS, Beaufort, SC.

This RFI summarizes the 2004 field activities and sampling results for SWMU 8, the Kavieng Street Landfill. Field activities included surveying the debris present at SWMU 8, landfill cover assessment, water level measurements, monitoring well installation, surface debris removal, soil and groundwater sampling, slug tests and tidal study. The report provides recommendations and a human health and ecological risk assessment.

Tetra Tech, Inc., April 2012. Corrective Measure Study for SWMU 8, MCAS Beaufort, Beaufort, South Carolina.

The RCRA CMS for SWMU 3 presents information used in support of identifying media cleanup standards, developing corrective measures alternatives, analyzing corrective measure alternatives and recommending corrective measures alternatives. The report includes a detailed site description and history, and a risk assessment for SWMU 3.

Tetra Tech, Inc., August 2012. Sampling and Analysis Plan Long-Term Plan for Groundwater Monitoring, UST Sites 9, 11, 13 and SWMU 8.

This sampling and analysis plan outlines the field sampling plan and quality assurance project plan requirements for the long-term plan at UST Sites 9, 11, 13 and SWMU 8. The SAP includes general background information and conceptual site models for each of the sites, including geologic conditions and contaminant sources, receptors and migration pathways.

Tetra Tech, Inc., August 2013. Corrective Measure Study for SWMU 3, MCAS Beaufort, Beaufort, South Carolina.

The RCRA CMS for SWMU 8 presents information used in support of identifying media cleanup standards, developing corrective measures alternatives, analyzing corrective measure alternatives and recommending corrective measures alternatives. The report includes a detailed site description and history, and a risk assessment for SWMU 8.

Tetra Tech, Inc., June 2014. Statement of Basis for SWMU 8, Kavieng Street Landfill, MCAS, Beaufort, South Carolina.

The Statement of Basis report presents the proposed remedy for SWMU 8 for public comment. The report includes background information and summarizes previous investigations. The proposed remedy was to maintain the existing soil cover, monitoring the groundwater, and implementing Land Use Controls.

Tetra Tech, Inc., May 2016. Statement of Basis for AOC P, MCAS Beaufort, Beaufort, South Carolina.

The Statement of Basis for AOC P provides operational history information for AOC P and summarizes previous site investigations. The statement of basis recommends no further action for AOC P.

Tetra Tech, Inc., May 2016. Debris Removal Report for AOC P, MCAS Beaufort, Beaufort, South Carolina.

This report summarizes the debris removal activities conducted at AOC P. The report includes a detailed description and map of the debris encountered and removed at AOC P.

USACE, March 1999. Draft Final Interim Removal Action Summary Report for SWMU 9, MCAS Beaufort SC (Draft Acting as Final).

This report summarizes the groundwater and soil sampling, and soil excavation activities conducted at SWMU 9. Soil was excavated at SWMU 9 to eliminate the source of contamination associated with the former lube oil pit. Groundwater data indicated that groundwater was clean. Contaminated soil was excavated.

USACE, August 1999. Draft Final RCRA Facility Investigation Findings Report for SWMU 5, MCAS Beaufort SC (Draft Acting as Final).

The RFI Findings Report summarizes the groundwater and soil sampling at SWMU 5. The sampling delineated soil and groundwater contamination at SWMU 5. The report stated that no interim removal action was recommended because soil and groundwater at SWMU 5 were clean. The site was recommended for no further action.

USACE, June 2000. Final Monitoring Report for SWMU 5, Former Pesticide Rinsate Pit, MCAS, Beaufort, South Carolina.

This report summarizes the results of the final round of bi-annual sampling and monitoring of the groundwater at SWMU 5. The sampling was completed at the request of SCDHEC to confirm the lack of contamination identified in previous sampling events. The sampling event was conducted in March 2000 and results indicated that all of the background, source and compliance well points were clean, confirming the results of the previous groundwater sampling in October 1998 and May 1999. The site was recommended for no further action.

USACE, December 2000. RCRA Facility Investigation Findings Report for SWMU 4, Southeast Point Disposal Area, MCAS, Beaufort, South Carolina.

The RFI for SWMU 4 summarizes the results of groundwater and soil sampling. General background and operational history are provided in the RFI.

USACE, December 2000. RCRA Facilities Investigation Findings Report for AOC C, Former Mop Washing Area, MCAS Beaufort, South Carolina.

This report summarizes the results of groundwater and soil sampling at AOC C. The report provides a description of the former mop washing area and information regarding the types of waste fluids that may have been released in this area. The report summarizes previous investigations, during which contamination was detected in the groundwater in the immediate vicinity of AOC C. The RFI found that soil in this area is generally clean, and groundwater contamination is localized and confined to a limited area around the mop washing station.

USACE, April 2003. First Five-Year Review Report for Kalama Specialty Chemicals, Beaufort, Beaufort County, South Carolina.

This report summarizes environmental sampling conducted at the Kalama Specialty Chemicals site to evaluate remedial actions completed at the site. The report includes general background information for the site.

USACE, May 2003. RCRA Facility Investigation for SWMUs 1 and 2, MCAS, Beaufort, South Carolina.

The RFI for SWMUs 1 and 2 presents general background information for the base and SWMUs. The report presents the results of soil and groundwater sampling and provides monitoring well construction records.

USACE, June 2003. RCRA Facility Investigation for SWMUs 6 and 14 Seepage Trenches and Inert Landfill, MCAS, Beaufort, South Carolina.

This RFI presents background information for SWMUs 6 and 14, environmental setting information, and summarizes field activities and sampling results. The field activities completed include soil, groundwater and soil vapor sampling and monitoring well installation. The report also presents a summary of potential receptors.

USACE, September 2004. Initial Assessment Report for West Pits Transfer Pipeline, MCAS Beaufort, SC.

The Initial Assessment Report for the West Pits provided information about the location of the fuel release. Additionally, the report included the results of groundwater and soil sampling, boring logs and well construction details. No details about the spill response were included in the report.

USACE, September 2005. Tier II Assessment Report for West Pits Transfer Pipeline, MCAS Beaufort, SC.

The Tier II Assessment Report for the West Pits provided information about the location of the release. Additionally, the report included the results of groundwater and soil sampling, boring logs and well construction details. No details about the spill response were included in the report.

USACE, April 2010. Groundwater Sampling Report 3 for East Rapid Refueling Pits Pipeline Release, February 2010 Sampling Event.

This report summarizes the results of a groundwater sampling event conducted at the East Rapid Fueling Pits. The report includes monitoring well locations and construction details for wells in this area.

USMC, December 2009. SWMU Assessment Report for new SWMU 87 – Former 1940's-Era Wastewater Treatment Plant, MCAS Beaufort, South Carolina.

This letter report presents information regarding a former 1940's era wastewater treatment plant discovered at MCAS Beaufort. The report presents general background information including years of operation and figures showing the layout of the former treatment plant.

USMC, September 2010. SWMU 87, Former 1940's-Era Wastewater Treatment Plant, MCAS, South Carolina.

This letter presents information about piping related to the former treatment plant. The letter states that the piping and associated man holes were discovered during a survey. The letter includes a figure showing the layout of the piping and manholes.

Appendix G
Communication Logs

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>May 9, 2018</u>
Talked with:	<u>Chris Vaigneur</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-6455</u>		<u>In Person Interview Summary</u>

Distribution: _____

Mr. Vaigneur is a current employee of MCAS Beaufort and is currently the Environmental Compliance Supervisor. His work includes supervising temporary waste storage and waste disposal on base. AECOM met with Mr. Vaigneur, at the recommendation of Craig Ehde, to conduct an in person interview regarding the use, clean-up and disposal of PFAS containing materials, especially AFFF, at MCAS Beaufort.

Mr. Vaigneur reported that no Teflon coating, or chrome plating shops have operated at MCAS Beaufort. To his knowledge, the only plating activities to occur on site were cadmium plating. The base has one auto-hobby shop, two car washes and two aircraft wash racks. Mr. Vaigneur was unaware of the type of aircraft soap used at the wash racks, and reported that one of the car washes was power wash only. He indicated that there are no active landfills on site. He reported that the base uses Beaufort Jasper water. Mr. Vaigneur stated that almost all storm water drains go to the large storm water pond on the eastern side of the base. He also reported that all oil water separators on base drain to the sanitary sewer.

Mr. Vaigneur indicated that a carbon drum containing treated PFAS contaminated groundwater leaked onto the concrete pad at the waste storage facility. Efforts were made to clean up the water, and the carbon drum was put into an overpack drum for containment.

During the interview, Mr. Vaigneur mentioned that he would provide AFFF spill reports, and storage and disposal records.

In reference to AFFF use, storage and disposal on base, Mr. Vaigneur stated the following:

- Tank 979 holds spent AFFF and AFFF rinsate.
- To his knowledge, AFFF is not used during fire training exercises.

- Mr. Vaigneur stated that if AFFF is captured it is disposed of according to guidance. Previously it was disposed of as non-regulated waste, and the waste was solidified. Currently the waste is incinerated. Current protocol for AFFF waste disposal includes storing 6,000 gallons of waste in AST 979 and disposing of the waste as bulk.
- Containerized AFFF that is currently stored on site will be disposed of under a contract.
- He reported that during a release of AFFF in a hangar, the AFFF goes into sump. A vac truck is used to collect AFFF from the release site to tank 979.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>May 9, 2018</u>
Talked with:	<u>Craig Ehde</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-7317</u>		<u>In Person Interview Summary</u>

Distribution: _____

Mr. Ehde is a current employee of MCAS Beaufort and is currently the Installation Restoration/UST Manager. AECOM met with Mr. Ehde to conduct an in person interview regarding the use of PFAS containing materials at MCAS Beaufort.

Based on his knowledge of current and historic site operations, Mr. Ehde reported that no Teflon coating, or chrome plating shops have operated at MCAS Beaufort. To his knowledge, the only plating activities to occur on site were cadmium plating. He indicated that the base has used Beaufort Jasper water since the 1960's and that there are no water supply wells on base. He reported that the fire training pit is not lined. Containment at the current training pit includes concrete and a berm.

In reference to AFFF use on base, Mr. Ehde stated the following:

- He has seen AFFF on the asphalt at the current fire training area, and in retention basins near hangars after a release of AFFF.
- He is not aware of any use of AFFF to prevent fire in the event of a fuel release or during emergency landings.
- He believes that AFFF was probably in the historic water treatment system, and may potentially be in the current sanitary sewer network.
- To his knowledge, AFFF was not used to put out fires during waste burning in historic landfills.
- He believes that most landfills on base were inactive prior to AFFF use on base.
- AFFF was used during a crash response in 2007, but he did not have details about the event.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>May 22 and 24, 2018</u>
Talked with:	<u>Chris Vaigneur</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Interview Follow up and</u>
Phone number:	<u>843-228-6455</u>		<u>Documentation Request</u>

Distribution:	<u>AFFF Inventory</u>	<u>AFFF Spill Reports</u>	<u>AFFF Non-bulk and Bulk Disposal Records</u>	<u>MCAS Beaufort General Development Map</u>
---------------	-----------------------	---------------------------	--	--

Mr. Vaigneur, the current Environmental Compliance Supervisor at MCAS Beaufort, was contacted by electronic mail to follow-up about records and documents that were discussed during the May 9, 2018 interview with AECOM. AECOM also requested additional information about AFFF releases, storage and disposal. The following files were provided in the correspondence and are provided in Appendices A through D, respectively:

- AFFF storage inventory summarizing the volume and location of AFFF installed in fire suppression systems and trucks, and pure unopened AFFF containers stored in warehouses. The storage inventory includes quantities of AFFF at each location and contact information for the managers of the locations and, if known, the manufacture and manufacture date of the AFFF.
- AFFF spill reports dating back to 2014. The reports include details about the release including date and time, location, personnel involved, description of the release, estimated volume of AFFF released, cause of release and corrective action.
- MCAS Beaufort General Development Map showing the current layout of the base including buildings, runways, roads and water features.
- AFFF waste disposal manifests including manifests for bulk disposal and a summary table for non-bulk disposal. In the email correspondence, Mr. Vaigneur stated that on the non-bulk (i.e. smaller containers <55 gal) record, it is hard to differentiate AFFF waste from other Non-regulated wastes on old manifests since they could be on the same line. The report is an estimate of AFFF waste disposal dating back to 2011, and the wastes included on this report were disposed of as non-regulated waste.

During the interview follow-up correspondence, Mr. Vaigneur reported that the following spills occurred, but he did not have records for them:

- 8/8/2003 – AFFF discharged in response to aircraft emergency (approx. 30 gallons);
- 11/22/2004 – Full system discharge (approx. 6,000 gallons) of AFFF at Hangar 414;
- 7/12/2005 – Full system discharge (approx. 1,100 gallons) of AFFF at Hangar 728; and
- 2015 – Full system discharge (approx. 1,200 gallons) at Hangar 2146.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>May 23, 2018</u>
Talked with:	<u>Darran Vaughn</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-7293</u>		

Distribution: _____

Chief Vaughn is a current employee of MCAS Beaufort and is currently the Chief of the Fire Department. Prior to working for the base Fire Department, Chief Vaughn was part of Crash Fire Rescue. AECOM contacted Chief Vaughn, at the recommendation of Craig Ehde, to conduct a telephone interview regarding the use of AFFF at MCAS Beaufort. During the telephone call, Chief Vaughn provided the following information:

- The last time Fire Department used AFFF for training was approximately 4 years ago. When AFFF was used for training it was not contained, it was just washed away with water.
- The fire training area is not lined. It consists of concrete, asphalt and grass.
- All hangars on the flight line have AFFF fire-suppression systems installed, which include an AST for AFFF.
- Chief Vaughn reported that to his knowledge every hangar on the flight line has had a release of AFFF. Releases in hangars have occurred due to fire suppression systems being inadvertently set off, including accidental release due to manual release, guns set off by maintenance, and system malfunction.
- Typical response when AFFF is released in the hangar includes pushing the AFFF out past the floor drains and attempt to contain with a berm. Floor drains in the hangars lead to the oil water separator. Typically NEARO cleans out the drains following a release.
- Maintenance of fire suppression systems is provided by Eagle Fire.
- AFFF equipment/trucks are typically parked in the fire department station and the ARFF station.
- He mentioned that the trucks do leak, sometimes just water from hoses but he says it is likely that the leaks include AFFF.
- The Fire Department tested trucks about 4 years ago in the fire training area, which included the use of AFFF mixed with water.

- Crash Fire Rescue perform wet checks frequently, which includes shooting water from truck hoses. The location of these tests is unknown. In the event that Crash Fire Rescue does a test that involves AFFF, the test is performed at the fire training area.
- ARFF and Fire Department trucks are filled and refilled with AFFF at the stations. AFFF is supplied through a reservoir on top of the truck. AFFF containers are turned upside down and pierced by a fixed blade in the reservoir to open container. There is no secondary containment during resupply.
- In the past, the Fire Department kept the empty AFFF containers in the bunker. He is unsure where they were disposed of when the building was demolished.
- Crash Fire Rescue clean their truck on the concrete in front of the station.
- Prior to demolition of building 595, the Fire Department and Aircraft Rescue and Fire Fighting washed the fire trucks on the front pad. The Fire Department now washes on the wash pad area at the current station.
- When foam was used in a fire response, it was not recorded on fire response records.
- Chief Vaughn reported that AFFF was used during the following events:
 - o Fuel release to prevent ignition in 1996 on the east ramp area;
 - o Fuel release to prevent ignition in 2004 on west ramp area;
 - o Crash response to contain/prevent fire in 1989 Parris Island jet crash;
 - o Fire response in 1989 to contain a tanker truck fire adjacent to the security gate at Laurel Bay;
 - o Crash response to contain/prevent fire in a 2004 jet crash at Compass Rose; and
 - o Crash response to contain/prevent fire in a 1991 jet crash at the end of runway 14.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>May 23, 2018</u>
Talked with:	<u>CWO3 Theodore Hensley</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u></u>		<u></u>
Distribution:	<u></u>	<u></u>	<u></u>

AECOM contacted Chief Warrant Officer (CWO3) Theodore Hensley via electronic mail (Theodore.Hensley@usmc.mil) to request an interview to complete the PFAS questionnaire. CWO3 Hensley is the current ARFF Officer in Charge (ARFF Fire Chief) at MCAS Beaufort. He declined to be interviewed due to a limited knowledge of the topic, and forwarded the email from AECOM to Master Sergeant (MSgt) David Looney. MSgt Looney is the current ARFF Staff Non-Commissioned Officer in Charge (Assistant ARFF Fire Chief). CWO3 Hensley forwarded MSgt Looney's response to AECOM. MSgt Looney stated that the only use of AFFF he is aware of occurred in 2012 or 2013 during a pit fire evolution in the fire training pit. CWO3 Hensley also stated that he was unaware of any other times AFFF was used.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>June 21, 2018</u>
Talked with:	<u>Darran Vaughn</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Interview Follow Up</u>
Phone number:	<u></u>		<u></u>

Distribution:

Chief Vaughn, the current Fire Department Chief at MCAS Beaufort, was contacted by electronic mail to request additional information about fixed fire suppression systems in the former jet engine test cell (Building 603), and contact information for personnel with knowledge of hangar construction.

Chief Vaughn reported that the former jet engine test cell (Building 603) was not equipped with an AFFF system. He stated that the newer jet engine test cell has an under the wing system with AFFF capabilities, but he is not sure if AFFF was ever installed in the tanks.

Chief Vaughn provided contact information for Mr. Owen Webb as someone who could provide information about the hangars.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>June 21, 2018</u>
Talked with:	<u>Darran Vaughn</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Interview Follow Up</u>
Phone number:	<u></u>		<u></u>
Distribution:	<u></u>	<u></u>	<u></u>

Chief Vaughn, the current Fire Department Chief at MCAS Beaufort, was contacted by electronic mail to request additional information about fire and emergency response at the EOD range.

Chief Vaughn reported that the fire department has responded to several fires on the EOD range. The fires mostly involved grass and wood fires that were caused by detonation of explosives. He stated that no AFFF has been used on the range at any time that he knows of over the last 30 years. He reported that the response plan is for MCAS F&ES to respond and if a magazine is on fire, they will set up a master stream device and flow water onto the bunker. No AFFF is used. He also reported that ARFF will respond in the event that additional manpower is necessary for a larger fire.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>July 13, 2018</u>
Talked with:	<u>Owen Webb</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-6705</u>		

Distribution: _____

Mr. Webb is a current employee of MCAS Beaufort and is currently the Public Works Engineering Director. AECOM spoke with Mr. Webb, at the recommendation of Chief Darran Vaughn, to conduct a telephone interview regarding details about the construction, layout and use of the hangars at MCAS Beaufort. Mr. Webb did not have information regarding AFFF releases at the hangar.

Mr. Webb reported the following information:

- Hangar 728 is set to be demolished in next few months and AFFF is stored in the hangar bay.
- Hangar 729 is an active hangar built around 1958. AFFF is stored in the hangar bay, and operational squadron maintenance occurs here.
- Hangar 414 was built in the early 1950's and used to be two separate hangars (Hangar 414 and 415). The two hangars were bridged in the late 1970's and named Hangar 414.
- Hangar 418 is an active hangar built around 1958. The hangar is a double squadron hangar.
- Hangar 594 is an active hangar built around 1958 and is a double squadron hangar.
- Hangar 1084 is an active hangar built in the late 1980's. The hangar was originally used for non-destructive aircraft investigation using an x-ray booth. It currently houses aircraft and operations include maintenance of the aircraft.
- Hangar 1256 is an active hangar built in the early 2000's and operates as the corrosion control facility. Operations include repainting aircraft and repairing damage to composite structure of aircraft.
- Hangar 2145 is the pilot training building and houses flight simulators.
- Hangar 416 was demolished about 3 years ago and Hangar 3060 was built on the site.
- Hangar 1331 was built in the mid-1990's. The building is used as a hush house, but has not been utilized in a while.

- Hanger 2146 was built about 5 years ago and is the F35 squadron hangar.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>July 30, 2018</u>
Talked with:	<u>Troy Ward</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-7361</u>		

Distribution: _____

Mr. Ward is a current employee of MCAS Beaufort and is currently the Townsend Bombing Range Program Manager. AECOM spoke with Mr. Ward, at the recommendation of Chief Darran Vaughn, to conduct a telephone interview regarding details about fire and emergency response activities at Townsend Bombing Range.

Mr. Ward reported that, to his knowledge, AFFF has not been used at Townsend Bombing Range. He stated that they only use high pressure water in their fire response, and that they do not have any crash trucks onsite, only scrubber trucks are kept onsite.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>February 12, 2019</u>
Talked with:	<u>Walter McCall</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u></u>		<u></u>

Distribution:

Mr. McCall is a current employee of MCAS Beaufort and is currently the Hazardous Materials Manager. He has had this role since September of 2010. AECOM contacted Mr. McCall to conduct a telephone interview because he is the point of contact for the Joint Hazardous Material Minimization Warehouse (Building 1270) which stores small quantities of AFFF in 5-gallon pails.

Mr. McCall stated that Building 1270 has been the Joint Hazardous Minimization Warehouse since 2003 or 2004. He reported that containers of AFFF remain closed for the duration of time that they are stored at Building 1270, and remain unopened through transportation to the place where they will be used. The pails of AFFF are stored on top of pallets. Mr. McCall reported that personnel do daily walkthroughs to inspect all containers stored in the warehouse. He stated that containers are inspected for leaks, bulging, and any other indication that the container is compromised. He has no knowledge of AFFF leaking or spilling in Building 1270.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>February 15, 2019</u>
Talked with:	<u>Scott Craft</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-7854</u>		

Distribution: _____

AECOM attempted to contact Mr. Joe Otterbine, the former lead fire inspector, who was listed as the point of contact for the Pilot Training Building (Building 2145). However, he no longer works at MCAS Beaufort. Mr. Craft is the current Lead Fire Inspector and was interviewed instead.

Mr. Craft was asked for additional information about Building 2145, which is listed as having AFFF in a fixed fire suppression system storage tank in AFFF storage records. Mr. Craft stated that there is no AFFF in the fixed fire suppression system at Building 2145. He also reported that construction of the building was completed in September 2013. Mr. Craft also stated that he was previously part of the CFR team at MCAS Beaufort. He reported that CFR training involved spraying foam onto the grassy area of the current fire training area. He stated that they stopped training with foam around 2000 to 2003, and now use a green dye during training instead of AFFF.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>February 28, 2019</u>
Talked with:	<u>Neil Tisdale and Ryan Dunn</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>Follow up PFAS Interview</u>
Phone number:	843-228-6317/843-228-6055		

Distribution: _____

Mr. Tisdale was contacted by electronic mail to request additional information about the oil-water separators (OWS) at Wash Rack 953 and Wash Rack 959. Mr. Tisdale forwarded the electronic mail to Mr. Ryan Dunn for confirmation. Mr. Tisdale is the Utilities Director at MCAS Beaufort and Mr. Dunn is an environmental engineer at MCAS Beaufort.

AECOM asked Mr. Tisdale if the OWSs at Wash Racks 953 and 959 are only connected to the wash racks, and if there was any potential for them to receive material/runoff from the hangars and surrounding area. In his response, Mr. Tisdale stated that he believes the OWS at Wash Racks 953 and 959 are only hooked up to the wash racks. Mr. Dunn confirmed this information. Mr. Dunn also stated that each OWS has an on/off valve that prevents releases of storm water into the sanitary sewer when not in use. The OWS valves remain closed when the wash racks are not in use.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>February 28, 2019</u>
Talked with:	<u>Chris Vaigneur</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Interview Follow up</u>
Phone number:	<u>843-228-6455</u>		

Distribution: _____

Mr. Vaigneur, the current Environmental Compliance Supervisor at MCAS Beaufort, was contacted by electronic mail to follow-up about information gained during the interview with Mr. Craft and to request additional information about AFFF storage on site.

During Mr. Craft's interview on February 15, 2019 he stated that the fixed fire suppression system in the pilot training building (Building 2145) is not equipped with AFFF. However, in the AFFF inventory records provided by Mr. Vaigneur on May 22, 2018, Building 2145 is listed as having AFFF in an above ground storage tank. In the electronic mail correspondence exchanged on February 28, 2019, Mr. Vaigneur confirmed that Building 2145 does not have an AST with AFFF, and it's inclusion on the AFFF inventory is an error. The AFFF inventory should have included Building 2146 (VMFAT-501/F-35 Hangar), not Building 2145.

Mr. Vaigneur provided information about the filling and emptying practices at Hazardous Waste Storage Tank 979. Tank 979 is loaded and unloaded using a vacuum truck. The truck and tank are connected via hose and cam lock fittings. The vacuum truck has spill supplies onboard and portable secondary containment is placed under the hose connections during filling and emptying. Mr. Vaigneur stated that there are no reported spills in this area.

Mr. Vaigneur provided additional information about the twin agent units (TAUs) that are used for fire suppression. TAUs are portable units with both AFFF and PKP fire suppression agents. There are five TAUs at MCAS Beaufort: three are stationed at Building 1171 (MWSD-31 Fuels); and two are stationed at Building 1313 (ARFF Station).

Mr. Vaigneur provided additional information about AFFF storage at the Hazardous Waste Storage Facility. He reported that AFFF has been stored in the Non-Regulated Waste Storage Area (Building 1205). He stated that Pure AFFF, AFFF rinsate and AFFF contaminated solids have been, and currently are, stored at the facility. Mr. Vaigneur stated that there are no reported spills in this area.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 1, 2019</u>
Talked with:	<u>Craig Ehde</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>Email Correspondence</u>
Phone number:	<u>843-228-7313</u>		<u>Regarding 2019 AFFF Release</u>

Distribution: _____

Mr. Ehde, the current Installation Restoration/UST Manager at MCAS Beaufort, contacted AECOM via electronic mail to report that an additional on-base release of AFFF occurred during a fire response. The electronic mail included an electronic mail correspondence dated March 1, 2019 from Mr. Vaigneur to Mr. Ehde, a photo of the fire response area, and a file containing the coordinates of the fire response area. The correspondence from Mr. Vaigneur to Mr. Ehde stated that ARFF Marines were returning from training at Parris Island and came across a Beaufort County deputy fighting a brush fire using a fire extinguisher. Mr. Vaigneur reports that ARFF Marines used a twin agent unit mounted to the Humvee to put out the fire, and they estimate that 20 gallons of old MILSPEC AFFF/PAK were used. Mr. Vaigneur provided the contact information for ARFF if further details were necessary.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 5, 2019</u>
Talked with:	<u>Staff Sergeant Matthew Tinsley</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>Interview Regarding the 2019</u>
Phone number:	<u>843-228-7395</u>		<u>AFFF Release</u>

Distribution: _____

Following the receipt of Mr. Ehde's information about the February 2019 AFFF release, AECOM contacted ARFF to gather additional details about the incident. Staff Sergeant Matthew Tinsley, the current ARFF Admin Chief at MCAS Beaufort, is the person who oversees the crew that responded to the fire, but was not present at the time of the incident. Staff Sergeant Tinsley confirmed that the information provided in the email from Mr. Ehde was correct. Staff Sergeant Tinsley stated that he could provide the fire response narrative that was prepared for the incident, and emailed the narrative to AECOM on March 5, 2019.

The fire response narrative was prepared by Burton Fire District Station 81. The incident took place at 3481 Trask Parkway, Beaufort, South Carolina 29906 (N 32° 27' 8.07", W 80° 43' 53.52") on February 22, 2019, at approximately 14:10. The incident was a brush fire and the cause of ignition was undetermined after investigation. The fire response narrative states that Engine 81, Battalion 81 and Beaufort City Engine 4 were dispatched to the brush fire. When Battalion 81 arrived on the scene, an MCAS Humvee was on scene extinguishing the fire with the help of a South Carolina State Trooper. Engine 81 also arrived at the scene. The fire was extinguished by the MCAS Humvee as the Burton Fire District units (Battalion 81 and Engine 81) arrived on the scene. Prior to leaving the scene, Engine 81 ensured that the fire was fully extinguished.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 6, 2019</u>
Talked with:	<u>GySgt Wesley Barker</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-6289</u>		

Distribution: _____

AECOM made attempts via telephone and electronic mail to contact Sergeant Timothy Sunday, who was listed as the point of contact for Buildings 262 and 612. Both buildings are listed as storage locations for 5-gallon pails of AFFF. AECOM spoke with Gunnery Sergeant (GySgt) Wesley Barker via telephone who stated that Sergeant Sunday retired approximately one year ago and was replaced by Sergeant Cornejo, who is currently on leave. GySgt Barker is a current employee of MCAS Beaufort and is currently the Material Chief for ARFF. He stated that he was knowledgeable of the storage locations and AFFF use as it is related to ARFF operations.

GySgt Barker provided additional information about the storage practices at Buildings 262 and 612. He reported that containers of AFFF remain closed for the duration of time that they are stored at Buildings 262 and 612, and remain unopened through transportation to the place where they will be used. The pails of AFFF are stored on top of pallets. GySgt Barker reported that personnel are in the buildings daily and regularly inspect the area. He has no knowledge of AFFF leaking or spilling in Buildings 262 and 612.

GySgt Barker reported that to his knowledge the only use of AFFF was during an off-base F-35 incident in September 2018. He stated that the incident was a crash response and that they reported the use of AFFF through the appropriate channels, including NREAO.

GySgt Barker stated that ARFF trucks are resupplied with AFFF at the training area. Trucks are resupplied through a reservoir on top of the truck. AFFF containers are turned upside down and pierced by a fixed blade in the reservoir to open the AFFF container. Trucks are parked at the ARFF station when not in use, and the trucks are washed at the ARFF station. GySgt Barker did not have any additional information to provide about AFFF use, storage or releases.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 13, 2019</u>
Talked with:	<u>Customer Service (Pam Flash)</u>	Project number:	<u>60563666</u>
From (company):	<u>BJWSA</u>	Subject:	<u>Water Supply Well Inventory</u>
Phone number:	<u>843-987-9200</u>		<u></u>

Distribution:

AECOM contacted Beaufort Jasper Water and Sewer Authority (BJWSA) customer service to verify that addresses with a water supply well on the property had an active water account. BJWSA confirmed that the following properties located in Beaufort, South Carolina have active water accounts:

- All properties on Grays Hills Acres Road;
- 2749 Trask Parkway;
- all properties on Salt Creek Drive;
- all properties on Craig Lane;
- all properties on Chris Lane;
- all properties on Shannon Lane;
- all properties on Sandhill Drive;
- all properties on Tammy Lane;
- all properties on Eastern Road; and
- all properties on Ice House Road.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 15, 2019</u>
Talked with:	<u>Sergeant Alexander</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-9043</u>		<u></u>

Distribution:

Sergeant (Sgt) Alexander is a current MCAS Beaufort employee and is currently the Safety/Environmental Representative for the EOD Range. AECOM contacted Sgt. Alexander at the recommendation of the MCAS Beaufort communications office. Sgt Alexander was asked about fire and emergency response at the EOD range.

Sgt Alexander reported that the fires at the EOD Range mostly involve grass and wood fires that were caused by detonation of explosives. He stated that, to his knowledge, no AFFF has been used on the EOD range. He reported that the response plan is for MCAS F&ES to respond and if a magazine is on fire, they will set up a master stream device and flow water onto the bunker. No AFFF is used. He also reported that the EOD Range goes over the fire response with the Fire Department to maintain a consistent response, and he stated that the Fire Chief explicitly stated that no AFFF should be used in any fire response at the EOD Range.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 13, 2019</u>
Talked with:	<u>Customer Service (Pam Flash)</u>	Project number:	<u>60563666</u>
From (company):	<u>BJSWA</u>	Subject:	<u>Water Supply Well Inventory</u>
Phone number:	<u>843-987-9200</u>		

Distribution: _____

/s/

Signature

AECOM contacted Beaufort Jasper Water and Sewer Authority (BJWSA) customer service to verify that addresses with a water supply well on the property had an active water account. BJWSA confirmed that the following properties located in Beaufort, South Carolina have active water accounts:

- All properties on Grays Hills Acres Road;
- 2749 Trask Parkway;
- all properties on Salt Creek Drive;
- all properties on Craig Lane;
- all properties on Chris Lane;
- all properties on Shannon Lane;
- all properties on Sandhill Drive;
- all properties on Tammy Lane;
- all properties on Eastern Road; and
- all properties on Ice House Road.

Communication Log

By:	<u>Elizabeth Maurer</u>	Date:	<u>March 15, 2019</u>
Talked with:	<u>Sergeant Alexander</u>	Project number:	<u>60563666</u>
From (company):	<u>MCAS Beaufort</u>	Subject:	<u>PFAS Assessment Questionnaire</u>
Phone number:	<u>843-228-9043</u>		

Distribution: _____

/s/

Signature

Sergeant (Sgt) Alexander is a current MCAS Beaufort employee and is currently the Safety/Environmental Representative for the EOD Range. AECOM contacted Sgt. Alexander at the recommendation of the MCAS Beaufort communications office. Sgt Alexander was asked about fire and emergency response at the EOD range.

Sgt Alexander reported that the fires at the EOD Range mostly involve grass and wood fires that were caused by detonation of explosives. He stated that, to his knowledge, no AFFF has been used on the EOD range. He reported that the response plan is for MCAS F&ES to respond and if a magazine is on fire, they will set up a master stream device and flow water onto the bunker. No AFFF is used. He also reported that the EOD Range goes over the fire response with the Fire Department to maintain a consistent response, and he stated that the Fire Chief explicitly stated that no AFFF should be used in any fire response at the EOD Range.